



March 26, 2021

Mr. Michael Sheehan
New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, NJ 08625-0420

**RE: APPLICATION FOR FLOOD HAZARD AREA VERIFICATION
IAOC A18 PITCH AREA
BAYWAY REFINERY COMPLEX
LINDEN, UNION COUNTY, NJ**

Dear Mr. Sheehan:

Kleinfelder is submitting the enclosed application for Flood Hazard Area (FHA) verification of Morses Creek to support future remedial design for Investigative Area of Concern (IAOC) A18 Pitch Area at the Bayway Refinery Complex (BRC) located in Linden, New Jersey. The application is being submitted by Kleinfelder on behalf of ExxonMobil Environmental and Property Solutions (ExxonMobil).

The FHA was determined via Method 2 – FEMA Tidal Method for the portion of Morses Creek on Block 520, Lot 6. In accordance with the specific permit application requirements, enclosed please find one complete copy of the permit application package, three copies of signed and sealed site plans and other sections where appropriate, and a check made payable to Treasurer, State of New Jersey, in the amount of \$1,000 to cover the applicable permit and permit review fees.

Please contact me at njoy@kleinfelder.com or 609-454-4564 if you have any questions or require further information.

Sincerely yours,
Kleinfelder, Inc.

Nicole Joy
Project Engineer

Justin Moses, P.E.
Senior Program Manager

Hard Copy:
Project File

Electronic Copy:
Steve Ferreira, USEPA Region 2
Charles Zielinski, NJDEP Case Manager
Michael Renzulli, LSRP
Deborah LaMond, P66
Chris McCardell, Stantec
Maureen Forlenza, ExxonMobil



APPLICATION FOR FLOOD HAZARD AREA VERIFICATION

**IAOC A18 – PITCH AREA, BLOCK 520, LOT 6
BAYWAY REFINERY COMPLEX – LINDEN, NEW JERSEY
KLEINFELDER PROJECT #: 20203020.001A**

DECEMBER 2020

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**ONLY THE CLIENT OR ITS DESIGNATED REPRESENTATIVES MAY USE THIS DOCUMENT AND ONLY FOR THE SPECIFIC PROJECT
FOR WHICH THIS REPORT WAS PREPARED.**

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SECTION A

INTRODUCTION AND PROJECT DESCRIPTION

1. INTRODUCTION

Kleinfelder, Inc. (Kleinfelder), on behalf of ExxonMobil Environmental and Property Solutions (ExxonMobil), is submitting the enclosed application materials to the New Jersey Department of Environmental Protection (NJDEP) for a Flood Hazard Area (FHA) Verification in support of future remedial design for Investigative Area of Concern (IAOC) A18 Pitch Area at the Bayway Refinery Complex (BRC) located in Linden, New Jersey. The FHA was determined via Method 2 – FEMA Tidal Method for the portion of Morses Creek on Block 520, Lot 6.

2. EXISTING SITE CONDITIONS

The BRC is an active 1,300-acre industrial facility that has been in operation since 1909 and located in an industrial area within the cities of Linden and Elizabeth, Union County, New Jersey. The BRC is owned and operated by Phillips 66 Company (P66). ExxonMobil is a former owner and operator of the BRC and is responsible for remediation of legacy environmental issues pre-dating its 1993 sale of the property, including IAOC A18 Pitch Area. This FHA and floodway verification for Morses Creek will support remedial design.

IAOC A18, Pitch Area, comprises the former Pitch Disposal Area, the Mudflat Area, the former East Retention Basin (ERB), and the Heat Exchanger Cleaning pad. Infrastructure is present within IAOC A18, including several above-ground pipelines carrying crude oil (Boat Lines), refinery pipelines including a portion of the Inter-Refinery Pipeline (IRPL; [out-of-service]) and a non-contact cooling water pipeline (southernmost 60-inch-diameter Salt Water Line [SWL]). IAOC A18 is bounded to the north by IAOC A17 (the Caverns) and to the southwest, south, and southeast by Morses Creek. In addition, a portion of the Poly Ditch transects IAOC A18, flowing southeast to the confluence with Morses Creek.

The former Pitch Disposal Area is an approximately 4-acre area within IAOC A18. Aerial photographs indicate that the former Pitch Disposal Area was filled with a variety of unknown materials between 1940 and 1961. This area is considered an undefined waste disposal area. A 1940 aerial photograph indicates this area was partitioned by berms. The partitioned sections close to the ERB were filled with what appeared to be a dark material, while the sections near the Poly Ditch appeared to contain standing water. Some additional filling also occurred in this area in conjunction with the construction of the IRPL, SWL and Boat Lines that cross IAOC A18. Pitch material is underlain by meadow mat (very compressible organic material) at depths ranging from between 4 and 8 feet below ground surface (bgs) to approximately 14 feet bgs. Pitch material consists of a low volatility, dark, viscous material (similar in composition to asphalt), containing a high percent of inert materials (typically >80% solids content), formed as a residue in the batch distillation of petroleum. Pitch material has been vertically delineated from ground surface to approximately 8 feet bgs.

The Mudflat Area is an approximately 12-acre area within IAOC A18 that extends to the southeast from the former Pitch Disposal Area. The Mudflat Area is bounded by Morses Creek and the Poly Ditch. The Poly Ditch is an operational ditch used by the refinery to discharge non-contact cooling water (NJPDES Permit Number NJ0001511). The mudflat material consists of former dredge spoils from Morses Creek and is underlain by meadow mat at depths ranging from approximately 4 to 14 feet bgs. The southernmost 60-inch-diameter SWL is present at approximately the boundary between the Mudflat Area and the former Pitch Disposal Area, although the Mudflat Area extends to the north of the SWL at the eastern side of IAOC A18.

3. PRESUMPTIVE REMEDY AND PILOT STUDY

The presumptive remedy for IAOC A18 includes the following:

- Perimeter hydraulic containment of ground water in areas adjacent to Morses Creek;
- Limited excavation and construction of an impermeable cap over the former Pitch Disposal Area and beneath BRC infrastructure;
- Construction of an impermeable cap across the Mudflat Area; and
- Vegetation plantings/wetland construction on top of the impermeable cap on the Mudflat Area for stabilization.

In May 2019, a pilot program was initiated in IAOC A18 to fill data gaps to support remedial action selection, permitting, remedial action design and constructability assessments. The pilot program comprised multiple elements including: installation of monitoring wells and advancement of geotechnical and environmental soil borings, advancement of steel sheet piles and installation/monitoring of impermeable capping cells, excavation of test pits, infrastructure monitoring, a perimeter air monitoring study, a hydrogeologic study, installation and monitoring of wetland vegetation test cells, and an equipment accessibility pilot study.

A Freshwater Wetlands General Permit #4 (GP-4) for hazardous site investigation and cleanup (File No. 2009-14-0002.4 FWW 180001) was obtained for the pilot study. On June 18, 2018, the Division of Land Use Regulation (DLUR) engineers performed a review of the Pilot Program Work Plan and confirmed that a Flood Hazard Area Individual Permit was not required since the pilot study project was below stormwater management thresholds.

SECTION B
FLOOD HAZARD AREA VERIFICATION APPLICATION CHECKLIST



FLOOD HAZARD AREA APPLICATION CHECKLIST

Verification

CALL NJDEP AT (609) 777-0454 IF YOU HAVE ANY QUESTIONS

To apply for a flood hazard area verification, please submit the information below to:

Postal Mailing Address

NJ Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, New Jersey 08625-0420
Attn: Application Support

Street Address (Courier & Hand Carry Only)

NJ Department of Environmental Protection
Division of Land Use Regulation
501 East State Street
Station Plaza 5, 2nd Floor
Trenton, New Jersey 08609
Attn: Application Support

Electronic Submission*

Access the submission system at <https://njdeponline.com>. Follow the registration process and create an account. To submit an application, select the service "Apply for a Land Use Permit or Authorization."

***An application for a verification may be submitted electronically only if it accompanies an application for a general permit, individual permit, or transition area waiver. Paper submission is required when applying solely for a verification.**

CALL NJDEP AT (609) 777-0454 IF YOU HAVE ANY QUESTIONS

1. A completed [application form](#) (Paper submissions ONLY) ***Included in Section C***

2. A completed [Property Owner Certification form](#) (Electronic submissions ONLY)

- Acceptable file formats include pdf, jpg, and png.

3. Public Notice:

Public notice is required only if the proposed verification is based on Method 4, 5, or 6 (see N.J.A.C. 7:13-3.4(f), 3.5, and 3.6, respectively).

- **Electronic Submissions:** A completed [Public Notice form](#). Documentation that notice of the application has been provided in accordance with N.J.A.C. 7:13-19 must be attached to the form (see below for details). Acceptable file formats include pdf, jpg, and png.
- **Paper Submissions:** Documentation that notice of the application has been provided in accordance with N.J.A.C. 7:13-19 (see below for details).

Both electronic and paper submissions require documentation of public notice as follows:

i. Notice to municipal clerk (N.J.A.C. 7:13-19.3(a)) ***Included in Section D***

A copy of the entire application, as submitted to the Department, must be provided to the municipal clerk in each municipality in which the site is located. For electronic submissions, the application consists of a description of the project, the specific permit(s)/authorization(s) being sought, and all items that will be uploaded to the online service, including all required items on this checklist.

- Documentation of compliance with this requirement shall consist of a copy of the certified United States Postal Service white mailing receipt, or other written receipt, for each copy of the application sent.

ii. Notice to governmental entities and property owners (N.J.A.C. 7:13-19.3(b) and (c))

A brief description of the proposed project, a legible copy of the site plan, and the form notice letter described at N.J.A.C. 7:13-19.3(d)1iii must be sent to the following recipients:

Included in Section D

- A. The construction official of each municipality in which the site is located;
- B. The environmental commission, or other government agency with similar responsibilities, of each municipality in which the site is located;
- C. The planning board of each municipality in which the site is located;
- D. The planning board of each county in which the site is located;
- E. The local Soil Conservation District if the regulated activity or project will disturb 5,000 square feet or more of land; and

F. Adjacent property owners:

If the application is for one of the following projects (listed at N.J.A.C. 7:13-19.3(c)1-6), notice shall be sent to all owners of real property, including easements, located within 200 feet of any proposed above-ground structure, except for any conveyance lines suspended above the ground or small utility support structures (e.g. telephone poles):

- A delineation of one-half mile or longer of a regulated water
- A linear project of one-half mile or longer
- A public project on a site of 50 acres or more
- An industrial or commercial project on a site of 100 acres or more
- A project to remove sediment or debris from a channel of one-half mile or longer

For any other project, notice shall be sent to all owners of real property, including easements, located within 200 feet of the site of the proposed regulated activity.

The owners of real property, including easements, shall be those on a list that was certified by the municipality, with a date of certification no more than one year prior to the date the application is submitted.

- Documentation of compliance with this requirement shall consist of:
 - 1. A copy of the certified United States Postal Service white mailing receipt for each public notice that was mailed, or other written receipt;
 - 2. A certified list of all owners of real property, including easements, located within 200 feet of the property boundary of the site (including name, mailing address, lot, and block) prepared by the municipality for each municipality in which the project is located. The date of certification of the list shall be no earlier than one year prior to the date the application is submitted to the Department; and
 - 3. A copy of the form notice letter.
- The form notice letter required under N.J.A.C. 7:13-19.3(d)1iii shall read as follows:

*"This letter is to provide you with legal notification that an application for a flood hazard area verification under <<Method 4/ Method 5/ Method 6>><<has been/will be>> submitted to the New Jersey Department of Environmental Protection, Division of Land Use Regulation for the development shown on the enclosed plan(s). A brief description of the proposed project follows:
<<INSERT DESCRIPTION OF THE PROPOSED PROJECT>>*

The complete permit application package can be reviewed at either the municipal clerk's office in the municipality in which the site subject to the application is located, or by appointment at the Department's Trenton Office. The Department of Environmental Protection welcomes comments and any information that you may provide concerning the proposed development and site. Please submit your written comments within 15 calendar days of receiving this letter to:

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, New Jersey 08625
Attn: (Municipality in which the property is located) Supervisor”

iii. Newspaper notice (N.J.A.C. 7:13-19.4) **Not applicable**

Newspaper notice, in the form of a legal notice or display advertisement in the official newspaper of the municipality(ies) in which the project site is located, or if no official newspaper exists, in a newspaper with general circulation in the municipality(ies), is required for the following projects:

- A. A delineation of one-half mile or longer of a regulated water
- B. A linear project of one-half mile or longer
- C. A public project on a site of 50 acres or more
- D. An industrial or commercial project on a site of 100 acres or more
- E. A project to remove sediment or debris from a channel of one-half mile or longer

If your project is not one listed above, newspaper notice is not required.

- Documentation of newspaper notice shall consist of:
 - 1. A copy of the published newspaper notice; and
 - 2. The date and name of the newspaper in which notice was published.
- The newspaper notice may be either a legal notice or display advertisement and must read as follows:

“Take notice that an application for a flood hazard area verification under <<Method 4/ Method 5/ Method 6>><<has been/will be>> submitted to the New Jersey Department of Environmental Protection, Division of Land Use Regulation for the development described below:

APPLICANT:

PROJECT NAME:

PROJECT DESCRIPTION:

PROJECT STREET ADDRESS:

BLOCK: LOT:

MUNICIPALITY: COUNTY:

The complete permit application package can be reviewed at either the municipal clerk’s office in the municipality in which the site subject to the application is located, or by appointment at the Department’s Trenton Office. The Department of Environmental Protection welcomes comments and any information that you may provide concerning the proposed development and site. Please submit your written comments within 15 calendar days of the date of this notice to:

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
501 East State Street
Trenton, New Jersey 08625
Attn: (Municipality in which the property is located) Supervisor”

iv. Notice for projects located in the Pinelands Area ***Not applicable***

For a project in the Pinelands Area as designated under the Pinelands Protection Act at N.J.S.A. 13:18A-11.a, documentation showing that a copy of the application form has been provided to the New Jersey Pinelands Commission. For electronic submissions, the "application form" will consist of a description of the project, including the lot, block, municipality, and county, and the specific permit(s)/authorization(s) being sought.

4. Application fees: ***Included in Section E***

- **Electronic Submissions:** The appropriate application fee, as specified in N.J.A.C. 7:13-20.1, payable through the online service via credit card or e-check, or to receive a bill, select "Bill Me" on the payment screen. Bills will be sent to the Fee Billing Contact identified in the service and must be paid directly to the Department of Treasury.
- **Paper Submissions:** The appropriate application fee, as specified in N.J.A.C. 7:13-20.1, in the form of a check (personal, bank, certified, or attorney), money order, or government purchase order made payable to "Treasurer State of New Jersey."

5. Site plans: ***Included in Section F***

All site plans must include the scale of the site plans, a north arrow, the name of the person who prepared the plans, date the site plans were prepared, and the applicant's name and the block, lot, and municipality in which the site is located. In addition, the site plans shall include the following information, both on and adjacent to the site, in accordance with N.J.A.C. 7:13-18.4(a)4:

- i. Existing features:
 - A. All relevant existing features such as lot lines, structures, land coverage, and vegetation
- ii. Topography:
 - A. Existing topography. All topography shall reference NGVD or include the appropriate conversion factor to NGVD
 - B. The limits of the regulated water including the "top of bank", the "centerline" for linear waters with drainage areas of <150 acres, the limits of the two-year flood for linear waters with drainage areas of >150 acres, and/or the centerline for amorphous/irregularly shaped water features
- iii. Riparian zone:
 - A. The location of any riparian zone onsite (see N.J.A.C 7:13-4.1)
- iv. Metes and bounds description:
 - A. A metes and bounds description of any existing and proposed flood hazard area and floodway limits onsite
 - B. Identification of the method at N.J.A.C. 7:13-3 that was used to determine these limits
- v. Flood hazard area/floodway information:
 - A. If the entire site lies within a flood hazard area and/or floodway, the site plans shall indicate this
 - B. The elevation(s) of the flood hazard area design flood throughout the site
- vi. Details of construction proposed in a regulated water:
 - A. N/A: No regulated activities will be authorized by a verification
- vii. The following statement: "NOTE: The State of New Jersey has determined that all or a portion of this lot lies in a flood hazard area and/or riparian zone. Certain activities in flood hazard areas and riparian zones are regulated by the New Jersey Department of Environmental Protection and some activities may be prohibited on this site or may first require a flood hazard area permit. Consult

www.nj.gov/dep/landuse or contact the Division of Land Use Regulation at (609) 777-0454 for more information prior to any construction onsite."

- **Electronic Submissions:** Acceptable file formats include pdf and zip. Site plans must be certified in accordance with N.J.A.C. 7:13-18.2(j) and prepared according to the Department's [site plan specifications](#) for electronic site plans. All plans must be digitally signed and sealed by a New Jersey licensed professional engineer, surveyor, or architect, as appropriate, pursuant to N.J.A.C. 13:40-7.2 through 7.4, with signatures and seals that meet the requirements of N.J.A.C. 13:40-8.1A. Site plans with electronic signatures, such as scans of site plans with a handwritten signature, will not be accepted.
- **Paper Submissions:** Three sets of site plans certified in accordance with N.J.A.C. 7:13-18.2(j). Prior to issuance of any verification, the Department will require four to five sets of final site plans. The site plans must be signed and sealed by a New Jersey licensed professional engineer, surveyor, or architect, as appropriate, pursuant to N.J.A.C. 13:40-7.2 through 7.4.

6. Photographs: ***Included in Section G***

- i. Color photographs depicting the site; and
 - ii. A photo location map showing the location and direction from which each photograph was taken.
- **Electronic Submissions:** Acceptable file formats include pdf, doc, docx, jpg, zip, ppt, and pptx.
 - **Paper Submissions:** One set of photographs mounted on 8½-inch by 11-inch paper. Copies of photographs are acceptable provided they are color copies. Black and white copies of photographs are not acceptable

7. An engineering report that includes: ***Attached separately, see Section H***

- i. The name, address, and telephone number of the engineer, as well as any other person designated by the engineer to answer questions about the report;
 - ii. All supporting hydrologic, hydraulic, flood storage volume, stormwater and structural calculations that are necessary to demonstrate that the application meets the requirements of N.J.A.C. 7:13;
 - iii. A narrative that explains the submitted calculations and describes why each particular calculation or methodology was used;
 - iv. All maps, references, and other supporting materials that were used to prepare the submitted calculations;
 - v. All flood maps, drainage area maps, and other materials used to determine the flood hazard area and/or floodway limits; and
 - vi. The certification set forth at N.J.A.C. 7:13-18.2(j).
- **Electronic Submissions:** Acceptable file formats include pdf and zip. Engineering reports for a verification based on Methods 4, 5, or 6 must be digitally signed and sealed by a New Jersey licensed professional engineer. Digital signatures and seals must meet the requirements of N.J.A.C. 13:40-8.1A. Engineering reports with electronic signatures, such as scans of reports with a handwritten signature, will not be accepted.
 - **Paper Submissions:** Three copies of the engineering report. Engineering reports for a verification based on Methods 4, 5, or 6 must be signed and sealed by an engineer.

8. Natural Heritage Program Letter: ***Included in Section I***

A copy of an NJDEP, Office of Natural Lands Management Natural Heritage Database data request response for endangered or threatened species of flora or fauna, including a Landscape Map report, if available

- **Electronic Submissions:** Acceptable file formats include pdf, jpg, and png.

9. A computer disk containing a copy of the entire application (Paper submissions ONLY)

Included in Section J

SECTION C
DLUR FORM



State of New Jersey
Department of Environmental Protection
Division of Land Use Regulation
Application Form for Permit(s)/Authorization(s)
501 E. State Street Mail Code 501-02A P.O. Box 420
Trenton, NJ 08625-0420
Phone #: (609) 777-0454 Web: www.nj.gov/dep/landuse



Please print legibly or type the following: Complete all sections and pages unless otherwise noted. Is this project a NJDOT Priority 1 Repair Project? Yes ☐ No ☒

Is this project a NJDOT Priority 2 Repair Project? Yes ☐ No ☒

1. **Applicant Name:** Exxon Mobil Corporation Co. c/o Maureen Forlenza E-Mail: maureen.p.forlenza@exxonmobil.com
Address: 1400 Park Avenue, Building 7 Daytime Phone: _____ Ext. _____
City/State: Linden, NJ Zip Code 07036 Cell Phone: 703-963-7132
2. **Agent Name:** Mr/Ms/Mrs Nicole Joy E-Mail: NJoy@Kleinfelder.com
Firm Name: Kleinfelder, Inc. Daytime Phone: 609-454-4564 Ext. _____
Address: 150 College Rd West, Suite 100 Zip Code 08540 Cell Phone: _____
City/State: Princeton, NJ
3. **Property Owner:** Phillips 66 E-mail: _____
Address: 1400 Park Avenue Daytime Phone: 908-523-6041 Ext. _____
City/State: Linden, NJ Zip Code _____ Cell Phone: _____
4. **Project Name:** Bayway Refinery Complex Address/Location: 1400 Park Avenue
Block 520, Lot 6 Flood Hazard Area Verification Project
Municipality: Linden County: Union Zip Code 07036
Block(s): 520 Lot(s): 6
N.A.D. 1983 State Plane Coordinates (feet) E (x): 570,744 N(y): 653,958 **Not Longitude/Latitude**
Watershed: Morses Creek/Piles Creek 07CA Subwatershed: Morses Creek/Piles Creek
Nearest Waterway: Morses Creek/Arthur Kill
5. **Project Description:** ExxonMobil is applying for a Flood Hazard Area and Floodway Verification of Morses Creek for Investigative Area of Concern (IAOC) A18 Pitch Area.

Provide if applicable: Previous LUR File # (s): 2009-04-0001.1, 2009-14-0002.4 Waiver request ID # (s): _____

A. SIGNATURE OF APPLICANT (required):

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment. If the applicant is an organization such as a corporation, municipal entity, home-owners association etc., the party responsible for the application shall sign on behalf of the organization.

Maureen Forlenza
Signature of Applicant
3/24/21
Date
Maureen Forlenza, Bayway Team Lead, Agent
and Attorney in Fact
Print Name

Signature of Applicant

Date

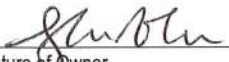
Print Name

B. PROPERTY OWNER'S CERTIFICATION

I hereby certify that the undersigned is the **owner of the property** upon which the proposed work is to be done. This endorsement is certification that the owner/easement holder grants permission for the conduct of the proposed activity. In addition, written consent is hereby given to allow access to the site by representatives or agents of the Department for the purpose of conducting a site inspection(s) or survey(s) of the property in question.

In addition, the undersigned property owner hereby certifies:

- | | |
|--|---|
| 1. Whether any work is to be done within an easement?
(If answer is "Yes" – Signature/title of responsible party is required below) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 2. Whether any part of the entire project will be located within property belonging to the State of New Jersey? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 3. Whether any work is to be done on any property owned by any public agency that would be encumbered by Green Acres? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 4. Whether this project requires a Section 106 (National Register of Historic Places) Determination as part of a federal approval? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |


Signature of Owner
03/24/2021
Date
Meghan Nolan on behalf of Phillips 66
Print Name

Signature of Owner/Easement Holder


Date

Print Name/Title

C. APPLICANT'S AGENT

I Maureen Forlenza, the Applicant Owner and _____, co-Applicant/Owner authorize to act as my agent/representative in all matters pertaining to my application the following person:

Nicole Joy
Name of Agent
Project Engineer
Occupation/Profession of Agent


Signature of Applicant/Owner

Signature of co-Applicant/Owner

AGENT'S CERTIFICATION:


I agree to serve as agent for the above-referenced applicant:


Signature of Agent

Kleinfelder, Inc.
Name of Firm


D. STATEMENT OF PREPARER OF PLANS, SPECIFICATIONS, SURVEYOR'S OR ENGINEER'S REPORT

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment.


Signature
Matthew E. Kuchta, P.E.
Print Name
Project Engineer, Kleinfelder
Position & Name of Firm
24GE04844000 3/18/2021
Professional License # Date

E. STATEMENT OF PREPARER OF APPLICATION, REPORTS AND/OR SUPPORTING DOCUMENTS (other than engineering)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment.


Signature
Nicole Joy
Print Name
Project Engineer, Kleinfelder
Position & Name of Firm

Professional License # (If Applicable) 3/18/2021
Date

FEE CALCULATION TIPS:

- Whenever the calculation requires an acreage figure (including the Stormwater calculations), you will need to round UP to the nearest whole number, for example: 0.25 acres gets rounded up to one (1) acre or 2.61 acres gets rounded up to three (3) acres.
- The maximum fee for a CAFRA Individual permit, an Upland Waterfront Development permit, or an In-Water Waterfront Development permit is \$30,000 per permit type. For example: if you are applying for both an upland and an in-water Waterfront Development the maximum fee is applied to each permit for a maximum total of \$60,000 plus any applicable stormwater review fee.
- The stormwater review fee is applied only one time per project, maximum of \$20,000, regardless of multiple applications.

APPLICATION(S) FOR: Please check each permit/authorization that you are applying for and fill in the calculated fee (for each) in the "Fee Paid" column

	Coastal General Permits	Fee Amount	Fee Paid
<input type="checkbox"/>	CZMGP1 Amusement Pier Expansion	\$1,000.00	
<input type="checkbox"/>	CZMGP2 Beach/Dune Activities	\$1,000.00	
<input type="checkbox"/>	CZMGP3 Voluntary Reconstruction Certain Residential/Commercial Dev.	\$1,000.00	
<input type="checkbox"/>	CZMGP4 Development of one or two SFH or Duplexes	\$1,000.00	
<input type="checkbox"/>	CZMGP5 Expansion or Reconstruction SFH/Duplex	\$1,000.00	
<input type="checkbox"/>	CZMGP6 New Bulkhead/Fill Lagoon	\$1,000.00	
<input type="checkbox"/>	CZMGP7 Revetment at SFH/Duplex	\$1,000.00	
<input type="checkbox"/>	CZMGP8 Gabions at SFH/Duplex	\$1,000.00	
<input type="checkbox"/>	CZMGP9 Support Facilities at a Marina	\$1,000.00	
<input type="checkbox"/>	CZMGP10 Reconstruction of Existing Bulkhead	\$1,000.00	
<input type="checkbox"/>	CZMGP11 Hazard Waste Clean-up	\$1,000.00	
<input type="checkbox"/>	CZMGP12 Landfall of Utilities	\$1,000.00	
<input type="checkbox"/>	CZMGP13 Recreation Facility at Public Park	\$1,000.00	
<input type="checkbox"/>	CZMGP14 Bulkhead Construction & Fill Placement	\$1,000.00	
<input type="checkbox"/>	CZMGP15 Construction of Piers/Docks/Ramps in Lagoons	\$1,000.00	
<input type="checkbox"/>	CZMGP16 Minor Maintenance Dredging in Lagoons	\$1,000.00	
<input type="checkbox"/>	CZMGP17 Eroded Shoreline Stabilization	\$1,000.00	
<input type="checkbox"/>	CZMGP18 Avian Nesting Structures	\$1,000.00	
<input type="checkbox"/>	CZMGP19 Modification of Electrical Substations	\$1,000.00	
<input type="checkbox"/>	CZMGP20 Legalization of the Filling of Tidelands	\$1,000.00	
<input type="checkbox"/>	CZMGP21 Construction of Telecommunication Towers	\$1,000.00	
<input type="checkbox"/>	CZMGP22 Construction of Tourism Structures	\$1,000.00	
<input type="checkbox"/>	CZMGP23 Geotechnical Survey Borings	\$1,000.00	
<input type="checkbox"/>	CZMGP24 Habitat Creation, Restoration, Enhancement, Living Shorelines	No Fee	No Fee
<input type="checkbox"/>	CZMGP25 1 to 3 Turbines < 200 Feet	\$1,000.00	
<input type="checkbox"/>	CZMGP26 Wind Turbines < 250 Feet	\$1,000.00	
<input type="checkbox"/>	CZMGP27 Dredge Lagoon (post storm event)	\$1,000.00	
<input type="checkbox"/>	CZMGP28 Dredge post Bulkhead Failure	\$1,000.00	
<input type="checkbox"/>	CZMGP29 Dredge Marina (post storm event)	\$1,000.00	
<input type="checkbox"/>	CZMGP30 Aquaculture Activities	\$1,000.00	
<input type="checkbox"/>	CZMGP31 Placement of Shell (shellfish areas)	\$1,000.00	
<input type="checkbox"/>	CZMGP32 Application of Herbicide in Coastal Wetlands	\$1,000.00	
<input type="checkbox"/>	CZM Permit-by-Certification (On-line application ONLY)	\$1000.00	

	Coastal Individual Permits	Fee Amount	Fee Paid
<input type="checkbox"/>	CAFRA – IP SFH or Duplex	\$2,000	
<input type="checkbox"/>	CAFRA – IP Residential not SFH/duplex	\$3,000 x _____ # of units	
<input type="checkbox"/>	CAFRA – IP Commercial, Industrial or Public	\$3,000 x _____ acres of the site	
<input type="checkbox"/>	WD - IP SFH or Duplex (Upland/Landward of MHWL)	\$2,000	
<input type="checkbox"/>	WD – IP Residential not SFH/duplex (Upland/Landward of MHWL)	\$3,000 x _____ # of units	
<input type="checkbox"/>	WD – IP Commercial, Industrial or Public Development (Upland/Landward of MHWL)	\$3,000 x _____ acres of the site	
<input type="checkbox"/>	WD - IP SFH or Duplex (Waterward of MHWL)	\$2,000	
<input type="checkbox"/>	WD – IP Residential not SFH/duplex (Waterward of MHWL)	\$3,000 x _____ acres of water area impacted	
<input type="checkbox"/>	WD – IP Commercial, Industrial or Public Development (Waterward of MHWL)	\$3,000 x _____ acres of water area impacted	
<input type="checkbox"/>	CSW – IP SFH or Duplex	\$2,000	
<input type="checkbox"/>	CSW – IP All Development not SFH/duplex	\$3,000 x _____ acres of wetlands disturbed	

	Additional Coastal Authorizations	Fee Amount	Fee Paid
<input type="checkbox"/>	Modification of a Coastal GP	\$500	
<input type="checkbox"/>	Minor Technical Modification of a Coastal Wetland Permit	\$500 x _____ # of items to be revised	
<input type="checkbox"/>	Minor Technical Modification of a CAFRA IP	\$500 x _____ # of items to be revised	
<input type="checkbox"/>	Minor Technical Modification of a Waterfront IP	\$500 x _____ # of items to be revised	
<input type="checkbox"/>	Major Technical Modification of a Coastal Wetland Permit	0.30 x _____ original fee = Fee (Minimum \$500)	
<input type="checkbox"/>	Major Technical Modification of a CAFRA IP	0.30 x _____ original fee = Fee (Minimum \$500)	
<input type="checkbox"/>	Major Technical Modification of a Waterfront IP	0.30 x _____ original fee = Fee (Minimum \$500)	
<input type="checkbox"/>	Zane Letter (Waterfront Development Exemption)	\$500	
<input type="checkbox"/>	CAFRA Exemption Request	\$500	
<input type="checkbox"/>	CZM General Permit Extension	\$240 x _____ # of GPs to be extended	
<input type="checkbox"/>	Waterfront Development Individual Permit – Extension (Waterward of MHWL)	0.25 x _____ original fee = Fee (Maximum \$3,000)	
<input type="checkbox"/>	Meadowlands District Water Quality Certificate	\$5,000 + (\$2,500 x _____ # acres regulated area disturbed)	
<input type="checkbox"/>	Individual Permit Equivalency/CERCLA	No Fee	No Fee

	Consistency Determination	Fee Amount	Fee Paid
<input type="checkbox"/>	Water Quality Certificate (NOTE: No fee required under the coastal program)	\$5,000 + (\$2,500 x _____ # acres regulated area disturbed)	
<input type="checkbox"/>	Federal Consistency	No Fee	No Fee

APPLICATION(S) FOR: Please check each permit/authorization that you are applying for and fill in the calculated fee (for each) in the "Fee Paid" column

	Freshwater Wetlands General Permits	Fee Amount	Fee Paid
<input type="checkbox"/>	FWGP1 Main. & Repair Exist Feature	\$1,000.00	
<input type="checkbox"/>	FWGP2 Underground Utility Lines	\$1,000.00	
<input type="checkbox"/>	FWGP3 Discharge of Return Water	\$1,000.00	
<input type="checkbox"/>	FWGP4 Hazard Site Invest/Cleanup	\$1,000.00	
<input type="checkbox"/>	FWGP5 Landfill Closures	\$1,000.00	
<input type="checkbox"/>	FWGP6 Filling of Non-Tributary Wetlands	\$1,000.00	
<input type="checkbox"/>	FWGP6A TA Adj. to Non-Tributary Wetlands	\$1,000.00	
<input type="checkbox"/>	FWGP7 Human-made Ditches/Swales in Headwaters	\$1,000.00	
<input type="checkbox"/>	FWGP8 House Additions	\$1,000.00	
<input type="checkbox"/>	FWGP9 Airport Sight-line Clearing	\$1,000.00	
<input type="checkbox"/>	FWGP10A Very Minor Road Crossings	\$1,000.00	
<input type="checkbox"/>	FWGP10B Minor Road Crossings	\$1,000.00	
<input type="checkbox"/>	FWGP11 Outfalls / Intakes Structures	\$1,000.00	
<input type="checkbox"/>	FWGP12 Surveying and Investigating	\$1,000.00	
<input type="checkbox"/>	FWGP13 Lake Dredging	\$1,000.00	
<input type="checkbox"/>	FWGP14 Water Monitoring Devices	\$1,000.00	
<input type="checkbox"/>	FWGP15 Mosquito Control Activities	\$1,000.00	
<input type="checkbox"/>	FWGP16 Creation/Restoration/Enhancement Habitat	No Fee	No Fee
<input type="checkbox"/>	FWGP17 Trails / Boardwalks	\$1,000.00	
<input type="checkbox"/>	FWGP17A Non-Motorized Multi-Use Paths	\$1,000.00	
<input type="checkbox"/>	FWGP18 Dam Repairs	\$1,000.00	
<input type="checkbox"/>	FWGP19 Docks and Piers	\$1,000.00	
<input type="checkbox"/>	FWGP20 Bank Stabilization	\$1,000.00	
<input type="checkbox"/>	FWGP21 Above Ground Utility Lines	\$1,000.00	
<input type="checkbox"/>	FWGP22 Expansion Cranberry Growing (Pinelands)	No Fee	No Fee
<input type="checkbox"/>	FWGP23 Spring Developments	\$1,000.00	
<input type="checkbox"/>	FWGP24 Malfunctioning Individual Septic Systems	No Fee	No Fee
<input type="checkbox"/>	FWGP25 Minor Channel / Stream Cleaning	\$1,000.00	
<input type="checkbox"/>	FWGP26 Redevelop Previously Disturbed Site	\$1,000.00	
<input type="checkbox"/>	FWGP27 Application of herbicide in wetlands	\$1,000.00	

	Highlands	Fee Amount	Fee Paid
<input type="checkbox"/>	Pre-application Meeting	\$500.00	
<input type="checkbox"/>	Resource Area Determination Boundary Delineation <u>one</u> acre	\$500.00	
<input type="checkbox"/>	Resource Area Footprint of Disturbance	\$500 + (\$50 x _____# of acres of the site)	
<input type="checkbox"/>	Resource Area Determination Verification (> one acre)	\$750 + (\$100 x _____# of acres of the site)	
<input type="checkbox"/>	Resource Area Determination Extension	0.25 x _____original fee (Minimum \$250)	
<input type="checkbox"/>	HPAAGP 1/ Habitat Creation/Enhance	No Fee	No Fee
<input type="checkbox"/>	HPAAGP 2 Bank Stabilization	\$500.00	
<input type="checkbox"/>	Preservation Area Approval (PAA)		
<input type="checkbox"/>	PAA with Waiver (Specify type below)		
	Waiver Type:		
<input type="checkbox"/>	HPAA Extension	\$1,000	

	Freshwater Individual Permits	Fee Amount	Fee Paid
<input type="checkbox"/>	FWW IP-SFH/Duplex-Wetlands	\$2,000	
<input type="checkbox"/>	FWW IP-Wetlands (not SFH/Duplex)	\$5,000 + (\$2,500 x _____# acres FWW disturbed)	
<input type="checkbox"/>	FWW IP-SFH/Duplex-Open Water	\$2,000	
<input type="checkbox"/>	FWW IP-Open Water (not SFH/Duplex)	\$5,000 + (\$2,500 x _____# acres FWW disturbed)	

	Freshwater Wetlands Transition Area Waivers	Fee Amount	Fee Paid
<input type="checkbox"/>	TAW Averaging Plan	<i>With valid LOI</i> \$1,000 + (\$100 x _____# acres TA disturbed)	
<input type="checkbox"/>	TAW Hardship Reduction		
<input type="checkbox"/>	TAW Reduction per N.J.A.C. 7:7A-8.1(d)		
<input type="checkbox"/>	TAW Special Activity Individual Permit		
<input type="checkbox"/>	TAW Special Activity Linear Development	<i>Without valid LOI</i> \$1000 + (\$100 x _____acres TA disturbed) + LOI Fee	
<input type="checkbox"/>	TAW Special Activity Redevelopment		
<input type="checkbox"/>	TAW Special Activity Stormwater		

	Letter of Interpretation	Fee Amount	Fee Paid
<input type="checkbox"/>	LOI Presence Absence	\$1,000.00	
<input type="checkbox"/>	LOI Footprint of Disturbance (3 Maximum)	\$1,000.00 each	
<input type="checkbox"/>	LOI Delineation ≤ 1.00 Acres	\$1,000.00	
<input type="checkbox"/>	LOI Verification	\$1,000 + (\$100 x _____# of acres of the site)	
<input type="checkbox"/>	LOI Partial Site Verification	\$1,000 + (\$100 x _____# of acres of the site subject to LOI)	
<input type="checkbox"/>	LOI Extension Presence/Absence, Footprint, Delineation < 1 acre (Re-Issuance)	\$500	
<input type="checkbox"/>	LOI Extension Line Verification (Re-Issuance)	0.50 x _____original fee (Minimum \$500)	

	Additional Freshwater Wetlands Authorizations	Fee Amount	Fee Paid
<input type="checkbox"/>	FWGP Administrative Modification	No fee	No Fee
<input type="checkbox"/>	FWGP Minor technical modification	\$500.00	
<input type="checkbox"/>	FWGP Major technical modification	\$500.00	
<input type="checkbox"/>	Individual Permit Administrative Modification	No Fee	No Fee
<input type="checkbox"/>	Individual Permit Minor Technical Modification	\$500.00	
<input type="checkbox"/>	Individual Permit Major Technical Modification	0.30 x _____original fee (Minimum \$500)	
<input type="checkbox"/>	TAW Administrative Modification	No Fee	No Fee
<input type="checkbox"/>	TAW Minor Technical Modification	\$500.00	
<input type="checkbox"/>	TAW Major Technical Modification	0.30 x _____original fee (Minimum \$500)	
<input type="checkbox"/>	FWGP Extension	\$500 x _____# of items to be extended	
<input type="checkbox"/>	Individual Permit/Open Water Permit Extension	0.30 x _____original fee (Minimum \$500)	
<input type="checkbox"/>	TAW Extension	\$500 x _____# of items to be extended	
<input type="checkbox"/>	Freshwater Wetlands Exemption	\$500.00	
<input type="checkbox"/>	TAW Exemption	\$500.00	
<input type="checkbox"/>	Permit Equivalency/CERCLA	No Fee	No Fee

APPLICATION(S) FOR: Please check each permit/authorization that you are applying for and fill in the calculated fee (for each) in the "Fee Paid" column

	Flood Hazard Area General Permits	Fee Amount	Fee Paid
<input type="checkbox"/>	FHAGP1 Channel Clean w/o Sediment Removal	No Fee	
<input type="checkbox"/>	FHAGP1 Channel Clean w/Sediment Removal	No Fee	
<input type="checkbox"/>	FHAGP2 Mosquito Control	\$1,000.00	
<input type="checkbox"/>	FHAGP3 Scour Protection Bridges/Culverts	\$1,000.00	
<input type="checkbox"/>	FHAGP4 Creation/Restoration/Enhancement of Habitat and Water Quality Values and Functions	No Fee	
<input type="checkbox"/>	FHAGP5 Reconstruction and/or Elevation of Building in a Floodway	No Fee	
<input type="checkbox"/>	FHAGP6 Construction of One SFH/Duplex and Driveway	\$1,000.00	
<input type="checkbox"/>	FHAGP7 Relocation of Manmade Roadside Ditches for Public Roadway Improvements	\$1,000.00	
<input type="checkbox"/>	FHAGP8 Placement of Storage Tanks	\$1,000.00	
<input type="checkbox"/>	FHAGP9 Construction/Reconstruction of Bridge/Culvert Across Water < 50 Acres	\$1,000.00	
<input type="checkbox"/>	FHAGP10 Construction/Reconstruction of Bridge/Culvert Across Water > 50 Acres	\$1,000.00	
<input type="checkbox"/>	FHAGP11 Stormwater Outfall Along Regulated Water <50 Acres	\$1,000.00	
<input type="checkbox"/>	FHAGP12 Construction of Footbridges	\$1,000.00	
<input type="checkbox"/>	FHAGP13 Construction of Trails and Boardwalks	\$1,000.00	
<input type="checkbox"/>	FHAGP14 Application of herbicide in riparian zone	\$1,000.00	

	Additional Flood Hazard Area Authorizations	Fee Amount	Fee Paid
<input type="checkbox"/>	FHA Hardship Exception Request	\$4,000	
<input type="checkbox"/>	FHA GP Administrative Modification	No Fee	No Fee
<input type="checkbox"/>	FHA GP Minor technical modification	\$500 x _____# of project elements to be revised	
<input type="checkbox"/>	FHA GP Major technical modification	0.30 x _____original fee (Minimum \$500)	
<input type="checkbox"/>	FHA Individual Permit Administrative Modification	No Fee	No Fee
<input type="checkbox"/>	FHA Individual Permit Minor Technical Modification	\$500 x _____# of project elements to be revised	
<input type="checkbox"/>	FHA Individual Permit Major Technical Modification	0.30 x _____original fee (Minimum \$500)	
<input type="checkbox"/>	FHA Verification Administrative Modification	No Fee	No Fee
<input type="checkbox"/>	FHA Verification Minor Technical Modification	\$500 x _____# of project elements to be revised	
<input type="checkbox"/>	FHA Verification Major Technical Modification	0.30 x _____original fee (Minimum \$500)	
<input type="checkbox"/>	FHA GP Extension	\$240	
<input type="checkbox"/>	FHA Individual Permit Extension	0.25 x _____original fee	
<input type="checkbox"/>	FHA Verification Extension of Methods 1, 2, 3, 5, or Riparian Zone Only	\$240	
<input type="checkbox"/>	FHA Verification Extension of Methods 4 or 6	0.25 x _____original fee	
<input type="checkbox"/>	FHA Individual Permit Equivalency/CERCLA	No Fee	No Fee
<input type="checkbox"/>	FHA GP Administrative Modification	No Fee	No Fee

	Flood Hazard Area Individual Permits	Fee Amount	Fee Paid
<input type="checkbox"/>	FHA - IP SFH and/or Accessory Structures	\$2,000	
<input type="checkbox"/>	Individual Permit (Fee is calculated by adding the base fee to the specific elements below)	\$3,000 Base Fee	
	FHA - IP Utility*	+ (\$1,000 x _____# of water crossings)	
	FHA - IP Bank/Channel (No Calculation Review) *	+ \$1,000	
	FHA - IP Bank/Channel (With Calculation Review) *	+ (\$4,000 + (\$400 x _____per 100 linear ft.))	
	FHA - IP Bridge/Culvert/Footbridge/Low Dam (No Calculation Review)*	+ (\$1,000 x _____# of structures)	
	FHA - IP Bridge/Culvert/Footbridge/Low Dam (With Calculation Review) *	+ (\$4,000 x _____# of structures)	
	FHA - Review of Flood Storage Displacement (net fill) Calculations*	+ \$4,000	
	Total	IP Review Fee	

Stormwater Review Fee (Maximum Fee = \$20,000)	Fee Amount (Round UP to the nearest whole number)	Fee Paid
<input type="checkbox"/> Stormwater Review (Fee is calculated by adding the base fee to the specific elements below)	\$3,000 Base Fee	
Review of Groundwater Calculations	+ \$250 x _____# acres disturbed	
Review of Runoff Quantity Calculations	+ \$250 x _____# acres disturbed	
Review of Water Quality Calculations	+ \$250 x _____# acres impervious surface	
Total	Stormwater Review Fee	

	Applicability Determination	Fee Amount	Fee Paid
<input type="checkbox"/>	Coastal Applicability Determination	No Fee	No Fee
<input type="checkbox"/>	Flood Hazard Applicability Determination	No Fee	No Fee
<input type="checkbox"/>	Highlands Jurisdictional Determination	No Fee	No Fee
<input type="checkbox"/>	Executive Order 215	No Fee	No Fee

	Flood Hazard Area Verifications	Fee Amount	Fee Paid
<input type="checkbox"/>	Verification-Delineation of Riparian Zone Only	\$1,000	
<input type="checkbox"/>	Verification-Method 1 (DEP Delineation) *	\$1,000	
<input checked="" type="checkbox"/>	Verification-Method 2 (FEMA Tidal Method) *	\$1,000	\$1,000.00
<input type="checkbox"/>	Verification-Method 3 (FEMA Fluvial Method) *	\$1,000	
<input type="checkbox"/>	Verification-Method 4 (FEMA Hydraulic Method)	\$4,000 + (\$400 x _____per 100 linear feet)	
<input type="checkbox"/>	Verification-Method 5 (Approximation Method) *	\$1,000	
<input type="checkbox"/>	Verification-Method 6 (Calculation Method)	\$4,000+(\$400 x _____per 100 linear feet)	

*Fee not applicable to (1) SFH

TOTAL FEE:	\$1,000
CHECK NUMBER:	

*Fee not applicable to (1) SFH

APPLICANT NAME: Exxon Mobil Corporation

FILE # (if known): 2009-04-0001.1 (Previous)

APPLICATION FORM - APPENDIX I

Section 1: Please provide the following information for the overall project site. All area measurements shall be recorded **in acres to the nearest thousandth** (0.001 acres).

<u>PROPOSED:</u>	<u>PRESERVED</u>	<u>UNDISTURBED</u>	<u>DISTURBED</u>
<i>RIPARIAN ZONE</i> (total: 1.270)	_____	_____	_____
<i>CZMRA FORESTED</i> (CZMRA IP – Only)	_____	_____	_____
<i>E & T HABITAT</i> Endangered and/or Threatened (total: 7.014)	_____	_____	_____
<i>FRESHWATER WETLANDS</i> (total: 3.939)	_____	_____	_____

Section 2: Please provide the following information for each permit/authorization requested pursuant to the Freshwater Wetlands Protection Act. All area measurements shall be recorded **in acres to the nearest thousandth** (0.001 acres). Use additional sheets if necessary

PERMIT TYPE	WETLAND TYPE <i>Emergent, Forest, Shrub, Etc.</i>	RESOURCE CLASSIFICATION <i>Ordinary, Intermediate, Exceptional, EPA, Etc.</i>	
_____	_____	_____	_____

<u>PROPOSED DISTURBANCE:</u>	<u>WETLANDS</u>	<u>TRANSITION AREA</u>	<u>SOW</u>
<i>FILLED</i>	_____	_____	_____
<i>EXCAVATED</i>	_____	_____	_____
<i>CLEARED</i>	_____	_____	_____
<i>TEMPORARY DISTURBANCE</i>	_____	_____	_____

PERMIT TYPE	WETLAND TYPE <i>Emergent, Forest, Shrub, Etc.</i>	RESOURCE CLASSIFICATION <i>Ordinary, Intermediate, Exceptional, EPA, Etc.</i>	
_____	_____	_____	_____

<u>PROPOSED DISTURBANCE:</u>	<u>WETLANDS</u>	<u>TRANSITION AREA</u>	<u>SOW</u>
<i>FILLED</i>	_____	_____	_____
<i>EXCAVATED</i>	_____	_____	_____
<i>CLEARED</i>	_____	_____	_____
<i>TEMPORARY DISTURBANCE</i>	_____	_____	_____

SECTION D

PUBLIC NOTICE REQUIREMENTS

In accordance with N.J.A.C. 7:13-19.3(a), (b) and (c), a copy of the entire verification application was sent to the City of Linden municipal clerk, and notice of the application was sent to governmental entities and neighboring landowners via the letter included with this application package.



December XX, 2020

NAME
ADDRESS
ADDRESS
ADDRESS

**Re: Application for Flood Hazard Area Verification
Notification of Landowners within 200 Feet of Project and Public Agencies**
Investigative Area of Concern (IAOC) A18 – Pitch Area
1400 Park Avenue, City of Linden, Union County, New Jersey, Block 520, Lot 6

Applicant: ExxonMobil Environmental and Property Solutions

Dear Interested Party:

This letter is to provide you with legal notification that an application for Flood Hazard Area Verification has been submitted to the New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation for the site shown on the enclosed plan. A brief description of the proposed project follows:

In support of future remedial design for Investigative Area of Concern (IAOC) A18 Pitch Area at the Bayway Refinery Complex located in Linden, New Jersey, a determination of the flood hazard area was made via Method 2 – FEMA Tidal Method for the portion of Morses Creek on Block 520, Lot 6. The purpose of this application is to verify the flood hazard area determination.

The complete permit application package can be reviewed at the municipal clerk's office in the municipality in which the site subject to the application is located or by appointment at the Department's Trenton Office. In addition, an electronic copy of the initial application can be provided via an OPRA request by contacting <https://www.nj.gov/dep/opra/opraform.html> from the Department's Trenton Office. The Department of Environmental Protection welcomes comments and any information that you may provide concerning the proposed development and site. Please submit your written comments within 45 calendar days of receiving this letter to:

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, New Jersey 08625
Attn: City of Linden Supervisor

If you have questions about the application, you can contact me at the address below.

Sincerely,

A handwritten signature in cursive script that reads "Nicole E. Joy".

Nicole Joy
Project Engineer
Agent for ExxonMobil Environmental and Property Solutions

Applicant:
ExxonMobil Environmental and Property Solutions
1400 Park Avenue, Building 7
Linden, NJ 07036



MICHAEL FRANGELLA
TAX ASSESSOR

City of Linden

Union County, New Jersey

TAX ASSESSORS

City Hall - 301 No. Wood Avenue
Linden, New Jersey 07036

(908) 474-8544

December 9, 2020

Michael Jenkins
150 College Rd W. Suite 100
Princeton, NJ 08540

RE: Block 520, Lot 6

Dear Sir/Madam:

As per your request dated December 3, 2020, I am furnishing you with a certified list of property owners in Linden located within the 200' radius of the above subject property.

Thank you.

Very truly yours,

Michael Frangella
Tax Assessor

MF:jr
Encls.

OWNER & ADDRESS REPORT

LINDEN

MICHAEL JENKINS
BLOCK 520 LOT 6

12/09/20 Page 1

BLOCK	LOT	QUAL	CLA	PROPERTY OWNER	PROPERTY LOCATION	Add'l Lots
517	1		4B	PHILLIPS 66 CO - PROPERTY TAX \$1364 2331 CITY WEST BLVD +HOUSTON, TX 77042	1900A BRUNSWICK AVE	45B, 1
517	1	CACID	4B	PHILLIPS 66 CO C/O VEOLIA % J RYAN 13155 NOEL RD #100 DALLAS, TX 75240	1900A BRUNSWICK AVE	
520	1		4B	PHILLIPS 66 CO - PROPERTY TAX \$1364 2331 CITY WEST BLVD +HOUSTON, TX 77042	2100 ALLEN ST EXT	
520	2.01		4B	SUBCARRIER COMMUNICATIONS INC 139 WHITE OAK LANE OLD BRIDGE, N J 08B57	2106 ALLEN ST EXT	
520	2.02		4B	GONZALEZ, JAIME 215-217 S 3RD ST ELIZABETH, NJ 07206	2110 ALLEN ST EXT	
520	3		4B	PHILLIPS 66 CO - PROPERTY TAX \$1364 2331 CITY WEST BLVD +HOUSTON, TX 77042	1900B BRUNSWICK AVE	499, 1BA
520	4		4B	PHILLIPS 66 CO - PROPERTY TAX \$1364 2331 CITY WEST BLVD +HOUSTON, TX 77042	2120 ALLEN ST EXT	461, PT 3
520	4	X	15F	LINDEN URBAN RENEWAL LP PO BOX 1967 HOUSTON, TX 77251	2120 ALLEN ST EXT	IN LIEU OF TAXES
520	5		4B	PHILLIPS 66 CO - PROPERTY TAX \$1364 2331 CITY WEST BLVD +HOUSTON, TX 77042	2130 ALLEN ST EXT	461, 2
520	7		5B	CONRAIL C/O PROP TAX DEPT PO BOX B499 PHILADELPHIA, PA 19101	1900D BRUNSWICK AVE	457, 40, BL461, 1-A
520	8		4B	PHILLIPS 66 CO - PROPERTY TAX \$1364 2331 CITY WEST BLVD +HOUSTON, TX 77042	3325C TREMLEY PT RD	457, 31A, 32C, 34, 35, ET
523	2		4B	PHILLIPS 66 CO - PROPERTY TAX \$1364 2331 CITY WEST BLVD +HOUSTON, TX 77042	100 E 21ST ST	457, 1/6, 7A, 7B, B, ETC

EASEMENT	Michael F. Stonac, Manager engineering Design One Elizabethtown Plaza, 3 rd Fl. East Union, New Jersey 07083
EASEMENT	Donna Short GIS Supervisor New Jersey-American Water Company, Inc. 1025 Laurel Oak Road Voorhees, New Jersey 08043
EASEMENT	Public Services Electric & Gas Company Manager-Corporation Properties 80 Park Plaza T6B Newark, New Jersey 07102
EASEMENT	Elizabethtown Gas Company Greg Balint 520 Green Lane Union, New Jersey 07083
EASEMENT	Verizon c/o Thomas Grabowski 445 Georges Road, North Brunswick, NJ 08902
EASEMENT	Comcast Cable 800 Rahway Avenue, Union, New Jersey 07083
EASEMENT	Sun Pipe Line Company Right of Way Dept-26 th Floor 1801 Market Street Philadelphia, PA 19103-1699
EASEMENT	Sunoco Pipeline L.P. Right of Way Dept. Montello Complex 525 Friztown Road Sinking Spring, PA 19608
TURNPIKE	New Jersey Turnpike Authority P.O. Box 1121, New Brunswick, New Jersey 08903
N.J. D.E.P	N.J. Department of Environmental Protection CN 402, Trenton, New Jersey 08625

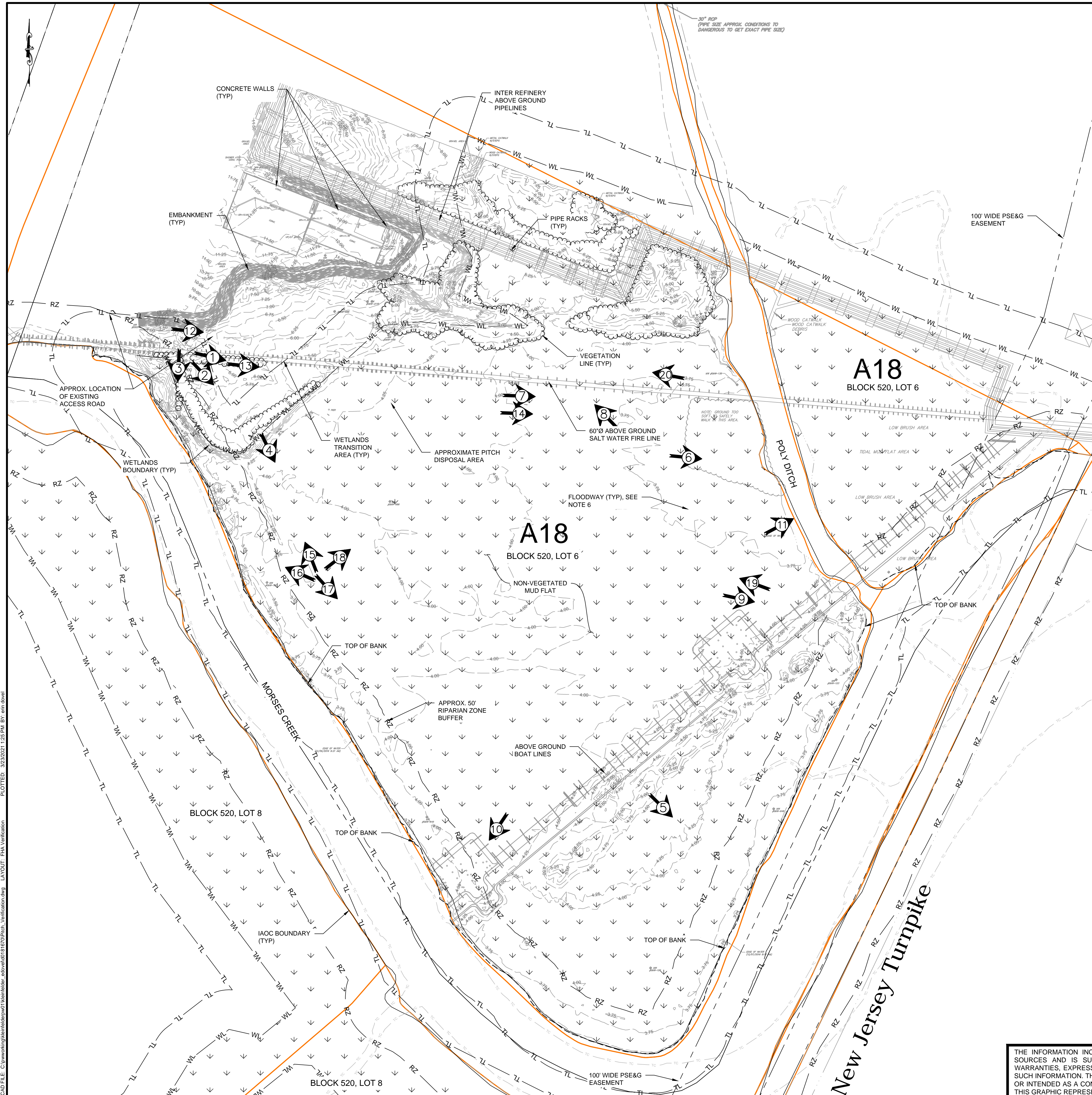
LIST CERTIFIED TO BE AN ABSTRACT OF TRUE RECORD CONTENT

SECTION E
APPLICATION FEE

A check in the amount of \$1,000 is included for the application fee as shown below.

APPLICATION SCHEDULE	FEE
Flood Hazard Area Verification – Method 2, FEMA Tidal Method (Morses Creek)	\$1,000
Total	\$1,000

SECTION F
SITE PLAN



- ## NOTES:
1. WATER BODY LIMITS, TOPOGRAPHY, AND SITE FEATURES INCLUDING TOP OF BANK FROM CADD TRANSMITTAL DATED AUGUST 20, 2019 PREPARED BY KELLER & KIRKPATRICK INC.
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 6. THE FLOOD HAZARD AREA (FHA) WAS DETERMINED TO BE 13 FT (NGVD29) BASED ON THE PRELIMINARY FEMA FLOOD INSURANCE RATE MAP NUMBERS 34039C0034G AND 34039C0035G USING NJDEP TIDAL METHOD 2. THEREFORE THE ENTIRE IAOB A18 IS WITHIN THE FHA. THE FLOODWAY OF MORSES CREEK SHALL BE CONSIDERED TO BE THE SURVEYED TOP OF BANK.
 7. THE STATE OF NEW JERSEY HAS DETERMINED THAT ALL OR A PORTION OF THIS LOT LIES IN A FLOOD HAZARD AREA AND/OR RIPARIAN ZONE. CERTAIN ACTIVITIES IN FLOOD HAZARD AREAS AND RIPARIAN ZONES ARE REGULATED BY THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SOME ACTIVITIES MAY BE PROHIBITED ON THIS SITE OR MAY FIRST REQUIRE A FLOOD HAZARD AREA PERMIT. CONSULT [WWW.NJ.GOV/DE/P/LANDUSE](http://www.nj.gov/de/p/landuse) OR CONTACT THE DIVISION OF LAND USE REGULATION AT (609) 777-0454 FOR MORE INFORMATION PRIOR TO ANY CONSTRUCTION ONSITE.
 8. METES AND BOUNDS DESCRIPTIONS OF THE FLOOD HAZARD AREA AND FLOODWAY OF MORSES CREEK HAVE BEEN DEVELOPED BY GREENMAN-PEDERSEN, INC. IN DECEMBER 2020 AND ARE PRESENTED ON SHEETS 2 AND 3 OF THIS PLAN SET.

LEGEND:

— — — — — PROPERTY BOUNDARIES & EASEMENTS

————— IAOC BOUNDARIES

— — — — — TOP OF BANK

TM WL WL TM
FRESHWATER WETLAND

— TL — TL — 50 FT WETLAND TRANSITION ZONE

— RZ — 50 FT RIPARIAN ZONE BUFFER

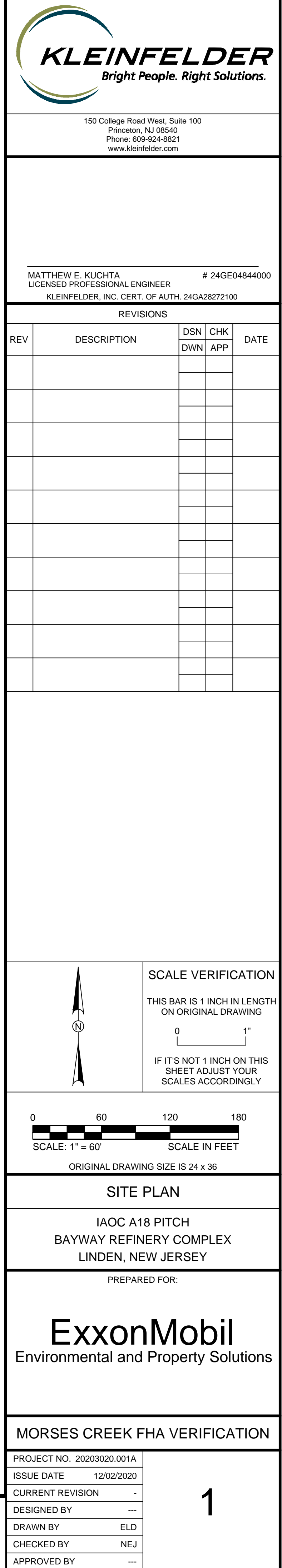
— — — — — EXISTING SITE FEATURES

— — — — — EXISTING 0.25 FT CONTOURS

~ ~ ~ ~ ~ APPROX. VEGETATION LINE

— TC — TIDELANDS CLAIM LINE

➡ 4 PHOTOGRAPH LOCATION AND DIRECTION



SECTION G

COLOR PHOTOGRAPHS

Photograph locations are provided on the **Site Plan** in Section F.

IAOC A18 SITE PHOTOGRAPHS



Photograph 1



Photograph 2

IAOC A18 SITE PHOTOGRAPHS



Photograph 3



Photograph 4

IAOC A18 SITE PHOTOGRAPHS



Photograph 5



Photograph 6

IAOC A18 SITE PHOTOGRAPHS



Photograph 7



Photograph 8

IAOC A18 SITE PHOTOGRAPHS



Photograph 9



Photograph 10

IAOC A18 SITE PHOTOGRAPHS



Photograph 11



Photograph 12

IAOC A18 SITE PHOTOGRAPHS



Photograph 13a



Photograph 13b

IAOC A18 SITE PHOTOGRAPHS



Photograph 14



Photograph 15

IAOC A18 SITE PHOTOGRAPHS



Photograph 16



Photograph 17

IAOC A18 SITE PHOTOGRAPHS



Photograph 18



Photograph 19

IAOC A18 SITE PHOTOGRAPHS



Photograph 20

SECTION H

ENGINEERING REPORT

The Engineering Report is being submitted along with this application as a separately bound document.



FLOOD HAZARD AREA VERIFICATION ENGINEERING REPORT

**IAOC A18 – PITCH AREA, BLOCK 520, LOT 6
BAYWAY REFINERY COMPLEX – LINDEN, NEW JERSEY
KLEINFELDER PROJECT #: 20203020.001A**

DECEMBER 2020

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**ONLY THE CLIENT OR ITS DESIGNATED REPRESENTATIVES MAY USE THIS DOCUMENT
AND ONLY FOR THE SPECIFIC PROJECT FOR WHICH THIS REPORT WAS PREPARED**

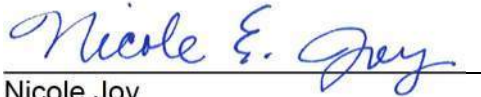
A Report Prepared for:

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Mail Code 401-06C
Trenton, New Jersey 08625-0420

**FLOOD HAZARD AREA ENGINEERING REPORT
IAOC A18 PITCH AREA, BLOCK 520, LOT 6**

LINDEN, NEW JERSEY

Prepared by:



Nicole Joy
Project Engineer

Reviewed by:



Justin Moses, P.E.
Senior Program Manager



Michael Meyerhoefer
Senior Project Manager

KLEINFELDER

2 South Gold Drive, Suite A
Hamilton, NJ 08691
Phone: 609.584.5271

December 2020

Kleinfelder Project No. 20203020/HAM20R119859

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1.0 INTRODUCTION	1
2.0 SITE OVERVIEW	2
2.1 Existing Site Conditions	2
2.2 Presumptive Remedy and Pilot Study.....	3
2.3 Flood Hazard Area.....	3
2.4 Site Topography	4
3.0 CERTIFICATION	5

LIST OF APPENDICES

- Appendix A Site Plans – IAOC A18 Pitch Area
- Appendix B FEMA FIRM Maps and Study
- Appendix C Poly Ditch Drainage Area Calculation Memo

1.0 INTRODUCTION

Kleinfelder has prepared this Engineering Report to address the requirements for a Flood Hazard Area (FHA) and Floodway Verification Application in support of future remedial design activities for Investigative Area of Concern (IAOC) A18 (Pitch Area) at the Bayway Refinery Complex (BRC) located in Linden, New Jersey. The focus of this verification is for the FHA determination via Method 2 – FEMA Tidal Method for the portion of Morses Creek on Block 520, Lot 6. On October 21, 2020, the New Jersey Department of Environmental Protection (NJDEP) confirmed the floodway limit in this area is the surveyed top of bank along Morses Creek during a conference call.

2.0 SITE OVERVIEW

2.1 Existing Site Conditions

The BRC is an active 1,300-acre industrial facility that has been in operation since 1909 and located in an industrial area within the cities of Linden and Elizabeth, Union County, New Jersey. The BRC is owned and operated by Phillips 66 Company (P66). ExxonMobil is a former owner and operator of the BRC and is responsible for remediation of legacy environmental issues pre-dating its 1993 sale of the property, including IAOC A18. This FHA and floodway verification for Morses Creek will support remedial design for the Pitch Area.

IAOC A18 is comprised of the former Pitch Disposal Area, the Mudflat Area, the former East Retention Basin (ERB), and the Heat Exchanger Cleaning pad. Infrastructure is present within IAOC A18, including several above-ground pipelines carrying crude oil (Boat Lines), refinery pipelines including a portion of the Inter-Refinery Pipeline (IRPL; [out-of-service]) and a non-contact cooling water pipeline (southernmost 60-inch diameter Salt Water Line [SWL]). IAOC A18 is bound to the north by IAOC A17 (the Caverns) and to the southwest, south, and southeast by Morses Creek. In addition, a portion of the Poly Ditch transects IAOC A18, flowing southeast to the confluence with Morses Creek.

The former Pitch Disposal Area is an approximately 4-acre area within IAOC A18. Aerial photographs indicate that the former Pitch Disposal Area was filled with a variety of unknown materials between 1940 and 1961. This area is considered an undefined waste disposal area. A 1940 aerial photograph indicates this area was partitioned by berms. The partitioned sections close to the ERB were filled with what appeared to be a dark material, while the sections near the Poly Ditch appeared to contain standing water. Some additional filling also occurred in this area in conjunction with the construction of the IRPL, SWL and Boat Lines that cross IAOC A18. Pitch material is underlain by meadow mat (very compressible organic material) at depths ranging from between 4 and 8 feet below ground surface (bgs) to approximately 14 feet bgs. Pitch material consists of a low volatility, dark, viscous material (similar in composition to asphalt), containing a high percent of inert materials (typically >80% solids content), formed as a residue in the batch distillation of petroleum. Pitch material has been vertically delineated from ground surface to approximately 8 feet bgs.

The Mudflat Area is an approximately 12-acre area within IAOC A18 that extends to the southeast from the former Pitch Disposal Area. The Mudflat Area is bounded by Morses Creek and the Poly

Ditch. The Poly Ditch is an operational ditch used by the refinery to discharge non-contact cooling water (NJPDES Permit Number NJ0001511). The mudflat material consists of former dredge spoils from Morses Creek and is underlain by meadow mat at depths ranging from approximately 4 to 14 feet bgs. The southernmost 60-inch diameter SWL is present at approximately the boundary between the Mudflat Area and the former Pitch Disposal Area, although the Mudflat Area extends to the north of the SWL at the eastern side of IAOC A18.

2.2 Presumptive Remedy and Pilot Study

The presumptive remedy for IAOC A18 includes the following:

- Perimeter hydraulic containment of ground water in areas adjacent to Morses Creek;
- Limited excavation and construction of an impermeable cap over the former Pitch Disposal Area and beneath BRC infrastructure;
- Construction of an impermeable cap across the Mudflat Area; and
- Vegetation plantings/wetland construction on top of the impermeable cap on the Mudflat Area for stabilization.

In May 2019, a Pilot Program was initiated in IAOC A18 to fill data gaps to support remedial action selection, permitting, remedial action design and constructability assessments. The pilot program was comprised of multiple elements including: installation of monitoring wells and advancement of geotechnical and environmental soil borings, advancement of steel sheet piles and installation/monitoring of impermeable capping cells, excavation of test pits, infrastructure monitoring, a perimeter air monitoring study, a hydrogeologic study, installation and monitoring of a wetland vegetation test cells , and an equipment accessibility pilot study.

A Freshwater Wetlands General Permit #4 (GP-4) for hazardous site investigation and cleanup (File No. 2009-14-0002.4 FWW 180001) was obtained for the pilot study. On June 18, 2018, the DLUR engineers performed a review of the Pilot Program Work Plan and confirmed that a Flood Hazard Area Individual Permit was not required since the pilot study project was below stormwater management thresholds.

2.3 Flood Hazard Area

Remedial action selection activities for IAOC A18 Pitch Area are ongoing; however, any construction completed within IAOC A18 associated with final remedy will take place entirely within the FHA of Morses Creek. As shown in the drainage area technical memorandum in Appendix C, the Poly Ditch has a drainage area of less than 50 acres and does not meet the

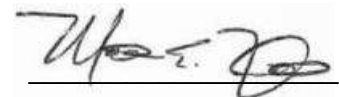
definition of a regulated water. Therefore, a FHA and floodway only exists for Morses Creek. The FHA Design Flood Elevation (DFE) on the site is 12 feet (NAVD88 vertical datum), as determined by Method 2 (FEMA Tidal Method) from preliminary the Base Flood Elevation (BFE) provided in FEMA Flood Study 34039C0034G and 34039C0035G, dated February 3, 2015 (Appendix B). The FHA elevations are converted to NGVD29 on the site plans (Appendix A) to 13 feet, respectively. As per the FEMA Tidal Method, “where FEMA mapping does not provide a floodway limit for the section of regulated water in question, the floodway limit shall equal the top of bank along the regulated water or channel.” The floodway along Morses Creek is equal to the surveyed top of bank. This was reviewed and confirmed by NJDEP during a conference call on October 21, 2020.

2.4 Site Topography

A topographical survey of the IAOC A18 Pitch Area was performed by Keller and Kirkpatrick in August 2019. The elevations were based on GPS surveying, and existing monuments were found to provide both a horizontal and vertical benchmark according to the NAD83 horizontal and NAVD29 vertical datums.

3.0 CERTIFICATION

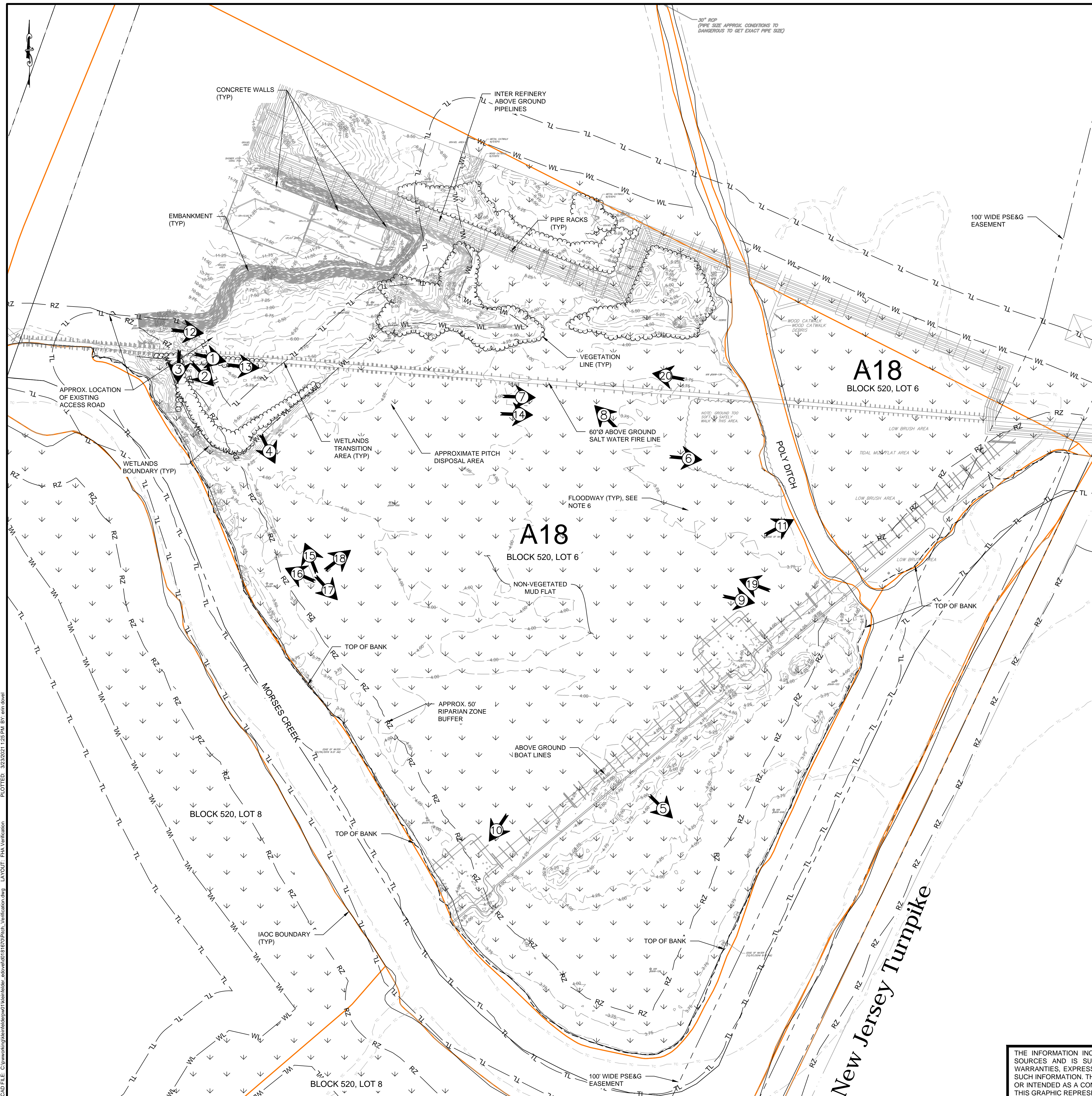
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment.



Matthew E. Kuchta

NJ. P.E. License No. 24GE04844000

APPENDIX A
SITE PLANS
IAOC A18 PITCH AREA



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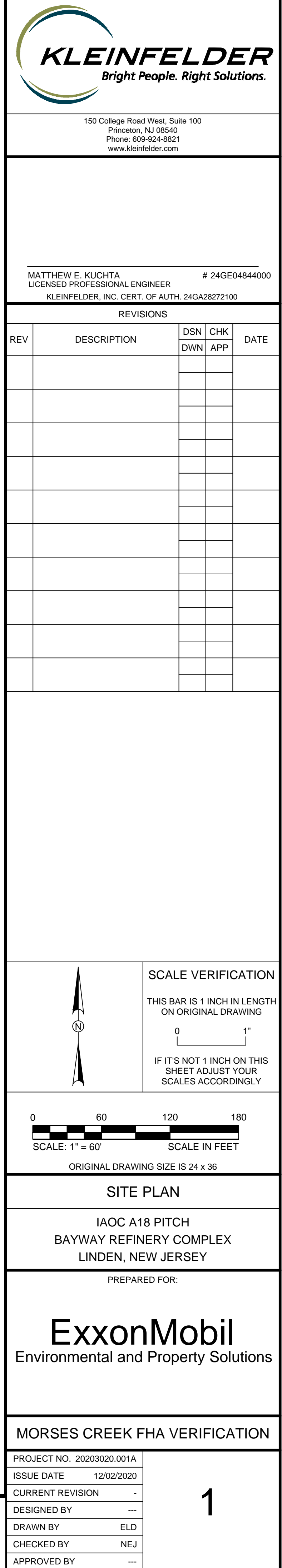
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— — — — — EXISTING 0.25 FT CONTOURS

~ ~ ~ ~ ~ APPROX. VEGETATION LINE

— TC — TIDELANDS CLAIM LINE

➡ 4 PHOTOGRAPH LOCATION AND DIRECTION



APPENDIX B
FEMA FIRM MAPS AND STUDY

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New Jersey State Plane 2900 zone. The **horizontal datum** was NAD 83. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the State of New Jersey Office of Information Technology. This information was derived from digital orthophotos produced at a scale of 1:2400 with a 1-foot pixel resolution from photography dated 2012.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

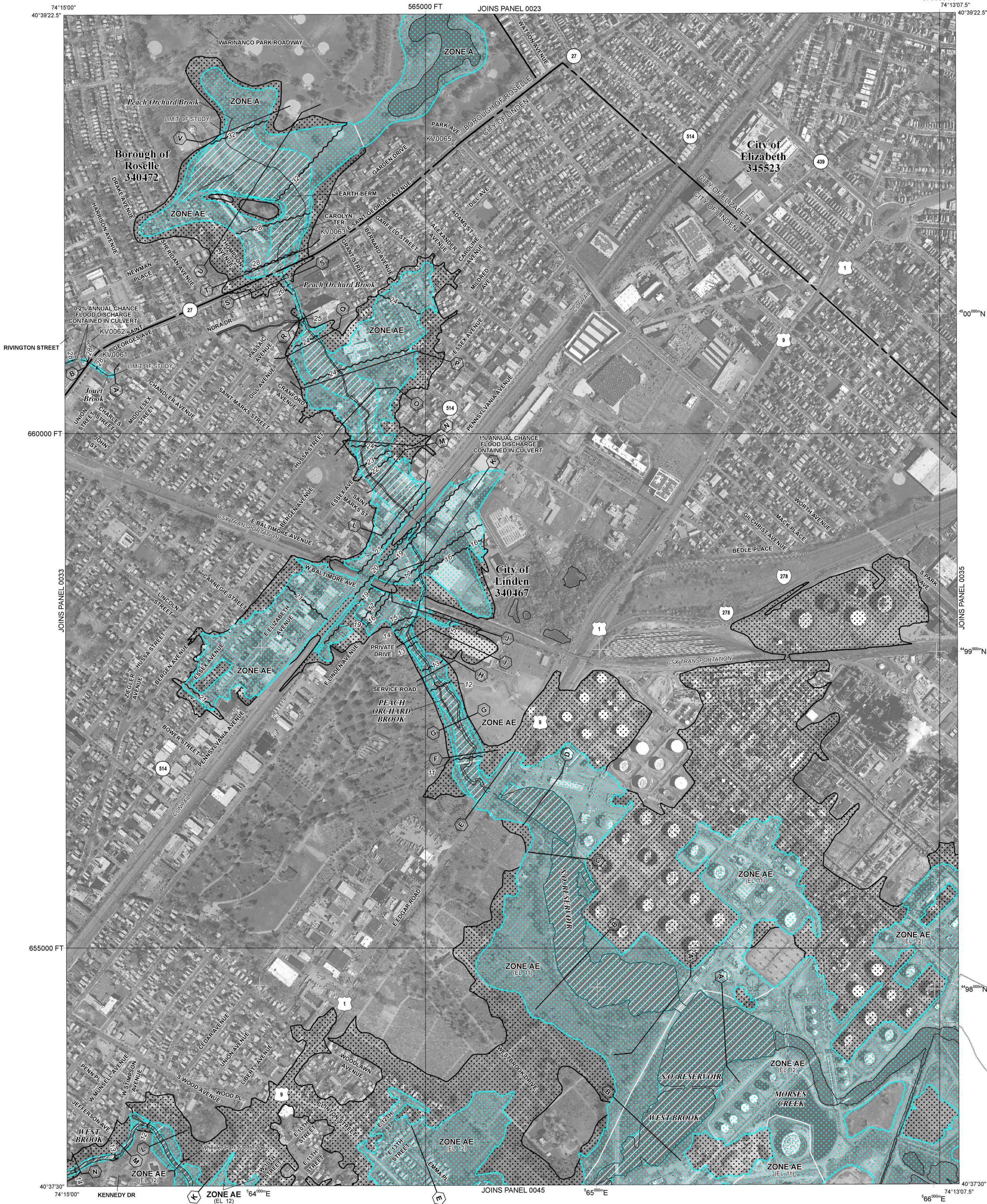
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LIMWA)**. The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LIMWA (or between the shoreline and the LIMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Contact the **FEMA Map Information eXchange** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and their website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfp>.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently destroyed. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS
ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS
ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- New Jersey Flood Hazard Area Design Flood (NJFHADF)
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- Base Flood Elevation line and value; elevation in feet* (EL 987)
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Limited detail cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone
- 5000-foot grid values: New Jersey State Plane coordinate system (FPSZONE 2900), Transverse Mercator projection

87°07'45", 32°22'30"

600000 FT
DX5510 x
M 1.5
River Mile

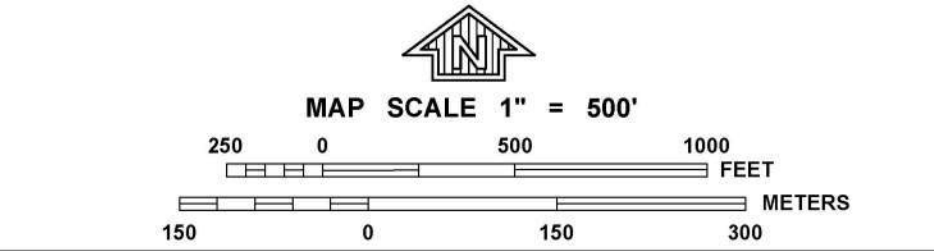
MAP REPOSITORY
Refer to listing of Map Repositories on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
SEPTEMBER 20, 2006

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0034G

FIRM
FLOOD INSURANCE RATE MAP

UNION COUNTY, NEW JERSEY (ALL JURISDICTIONS)

PANEL 34 OF 49
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ELIZABETH, CITY OF	345523	0034	G
LINDEN, CITY OF	340467	0034	G
ROSSELLE, BOROUGH OF	340472	0034	G

PRELIMINARY
FEBRUARY 3, 2015

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
34039C0034G

MAP REVISED

Federal Emergency Management Agency

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Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the State of New Jersey Office of Information Technology. This information was derived from digital orthophotos produced at a scale of 1:2400 with a 1-foot pixel resolution from photography dated 2012.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LIMWA)**. The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LIMWA (or between the shoreline and the LIMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

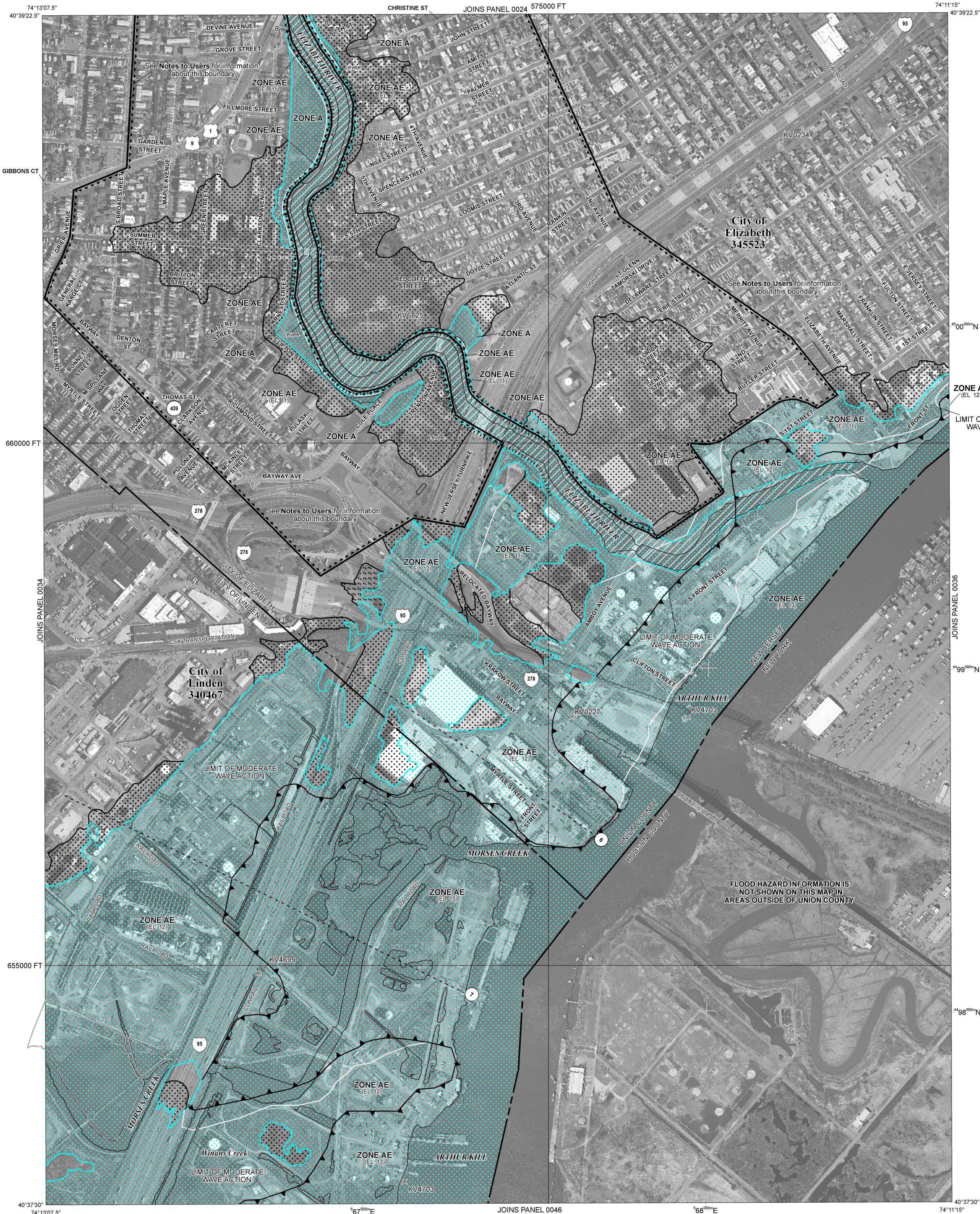
Contact the **FEMA Map Information eXchange** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and their website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfp>.

NJFHADF is equal to the 1-percent-annual chance flood plus an additional 25% in flow, and not to exceed the 0.2-percent-annual chance flood. NJFHADF boundary is to regulate disturbance to the land and vegetation within flood hazard area of a water body. This regulation is set forth by the State of New Jersey Flood Hazard Area Control Act Rules N.J.A.C. 7:13, and is administered by New Jersey Department of Environmental Protection (NJDEP).

ATTENTION: The levee, dike, or other structure that impacts flood hazards inside this boundary has not been shown to comply with Section 65.10 of the NFIP Regulations. As such, this FIRM panel will be revised at a later date to update the flood hazard information associated with this structure.

The flood hazard data inside this boundary on the FIRM panel has been republished from the previous effective (historic) FIRM for this area, after being converted from NGVD 29 to NAVD 88.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- New Jersey Flood Hazard Area Design Flood (NJFHADF)
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

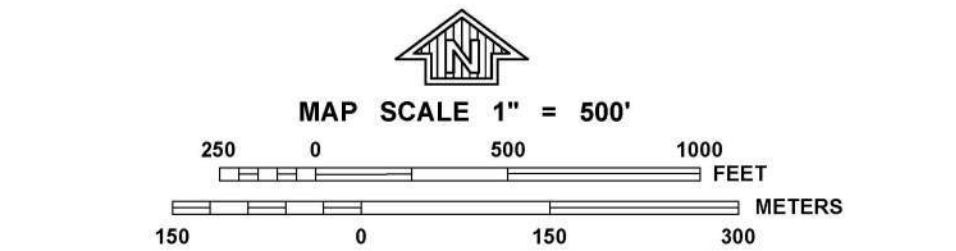
- Cross section line
- Limited detail cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 18
- 5000-foot grid values: New Jersey State Plane coordinate system (FIPSZONE 2900), Transverse Mercator projection

- 600000 FT
- DX5510 x
- M1.5
- River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
SEPTEMBER 20, 2006
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0035G
FIRM
FLOOD INSURANCE RATE MAP
UNION COUNTY, NEW JERSEY (ALL JURISDICTIONS)
PANEL 35 OF 49
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ELIZABETH, CITY OF	345523	0035	G
LINDEN, CITY OF	340467	0035	G

PRELIMINARY
FEBRUARY 3, 2015
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
34039C0035G
MAP REVISED
Federal Emergency Management Agency

APPENDIX C

POLY DITCH DRAINAGE AREA CALCULATION MEMO

TECHNICAL MEMORANDUM

TO: Ms. Maureen Forlenza, E&PS

FROM: Marcelo Cerruci, Kleinfelder

COPY: Michael Meyerhoefer, Kleinfelder; Justin Moses, Kleinfelder;
Nicole Joy, Kleinfelder

DATE: December 8, 2020

**SUBJECT: Determination of Effective Drainage Area for the Poly Ditch
Bayway Refinery Complex
Linden, New Jersey**

INTRODUCTION

Kleinfelder is submitting this memo summarizing the concepts used for the determination of the effective drainage area for the Poly Ditch, located at the Bayway Refinery Complex (BRC) in Linden, New Jersey. The Flood Hazard Area Control Act (FHACA), implemented by N.J.A.C. 7:13, establishes in section 2.2 that a drainage area exceeding 50 acres meets the definition of regulated waters and requires the flood hazard area and floodway to be delineated if fill material is proposed within these areas. In order to determine if the Poly Ditch meets the regulated waters criterion, Kleinfelder prepared a drainage area analysis that considers the detailed site topography in conjunction with the BRC's storm sewer system and the hydrology of the Mudflat-Morses Creek to define the effective drainage area of the Poly Ditch.

POLY DITCH DRAINAGE AREA ANALYSIS

The Poly Ditch is an operational ditch used by the refinery mainly to discharge non-contact cooling water and Boat Lines to Morses Creek. The general area around the Poly Ditch is mostly flat and is served by a network of stormwater sewers that collect and convey runoff to the BRC's wastewater treatment plant and to Morses Creek. The relief in the general vicinity of the Poly Ditch is less than a foot. Thus, the preferential pathways of sheet flow and the effective drainage area of the Poly Ditch depends on micro drainage characteristics, the stormwater sewer network and the hydrology of the Morses Creek-Mudflat area. The Mudflat is an approximately 12-acre marsh area that is transected by the southern end of the Poly Ditch. The Mudflat is often submerged during significant storm events and the high spring tides. A relatively steep gradient of approximately 4 feet defines the northern limit of the Mudflat Area. The Mudflat is otherwise bounded by the Morses Creek and is characterized by irregular flat terrain.

The general drainage area of the Poly Ditch was defined using automatic delineation tools available with ArcGIS and digital elevation data. Bare earth elevations were extracted from Point Cloud LiDAR datasets in NAVD88 vertical datum and converted to a 0.23 feet resolution elevation raster (DEM). The digital terrain was used in ArcGIS to delineate drainage basins contributing to the Poly Ditch. Due to the flatness of the terrain, the DEM was hydro enforced to prevent multiple sinks and to result in well-defined drainage basins for the Poly Ditch. The hydro enforcement conservatively assigned artificial flow paths towards the Poly Ditch for flat areas with undefined flow paths, such as the area near the train tracks and the Mudflat.

Two main drainage areas were defined for the confluence of the Poly Ditch with Morses Creek based on hydro enforced topography: Effective Flow Area and Tank Farm/Industrial Area. The Effective Flow Area is 14.5 acres and comprises the immediate vicinity of the headwaters of the Poly Ditch and part the Mudflat Area northeast of the Poly Ditch. The Tank Farm/Industrial Area is 49.9 acres and comprises the above-ground storage tanks, industrial facilities to the northwest of the Poly Ditch and the Mudflat Area southwest of the Poly Ditch.

Figure 1 presents the Effective Flow Area, the Tank Farm/Industrial Area, the elevation contours derived from the DEM, and the overland flow paths simulated with watershed delineation tools available in ArcGIS. Note that the simulated overland flow path for the Tank Farm/Industrial Area is connected to the southern end of the Poly Ditch. The simulated flow path in ArcGIS assumes a hydro enforced terrain without depressions (well-defined, interconnected drainage network with no sinks), which is not the case for the Mudflat and most of the general vicinity of the Poly Ditch. In reality, according to the site topography presented in **Figure 1**, any excess overland flow from the Tank Farm/Industrial Area is split between the adjacent northeast area and the Mudflat-Morses Creek area. When the Mudflat is not submerged, the fraction of the runoff migrating towards the Mudflat is diffused to the southern end of the Poly Ditch and Morses Creek. When the Mudflat is submerged, the totality of the excess runoff routed towards the Mudflat is discharged directly to Morses Creek.

A significant portion of the Tank Farm/Industrial Area drains through the stormwater sewer network. The stormwater collected within the Tank Farm/Industrial Area is conveyed to the wastewater treatment plant, Dam #2 condenser sewer and Morses Creek. The FHACA rules regulate the floodway based on the 100-year event. For this reason, stormwater management devices are generally not considered for determining jurisdiction under FHACA rules. However, according to BRC's records, the stormwater sewers had sufficient capacity to convey runoff due to 10 inches of rain within 24 hours measured on site in August 2011 (Hurricane Irene). This is more than the NOAA Atlas 14 100-year event for the site (8.57 inches). In addition, any excess overland flow generated from the Tank Farm/Industrial Area would first accumulate in lower elevation areas near the train tracks, and then flow to the adjacent northeast area towards other operational ditches present on the site and towards the Mudflat area.

According to the Flood Insurance Rate Map (FIRM) for Union County, New Jersey, Panel 0035F, the Mudflat and the southern end of the Poly Ditch are submerged for the 100-year event

(Attachment 1). Therefore, any excess runoff from the Tank Farm/Industrial Area routed through the Mudflat would discharge directly into Moses Creek for the 100-year event.

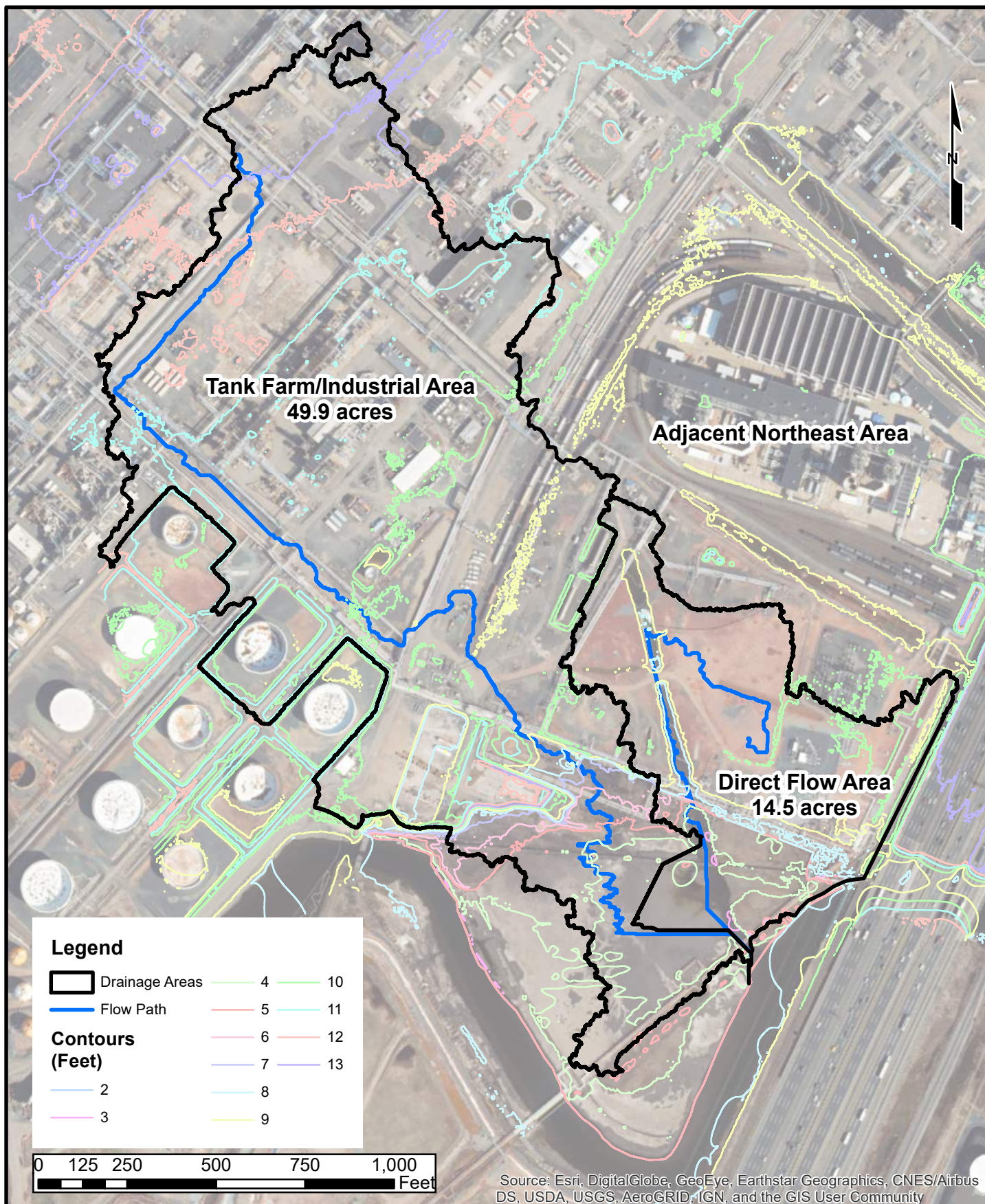
The geomorphologic and hydrologic characteristics of the Mudflat, such as the flat terrain and submerged conditions during the 100-year event, indicate that an effective drainage area of no more than 14.5 acres for the Poly Ditch is the most appropriate representation for the purpose of determining jurisdiction under FHACA rules. Therefore, the Poly Ditch does not meet the definition of regulated waters.

If you have any questions or comments regarding the aforementioned activities or data, please feel free to contact Marcelo Cerucci (mcerucci@kleinfelder.com) or Nicole Joy (njoy@kleinfelder.com).

Enclosures (2)

Figure 1 – Basin Delineation and Characteristics
Attachment 1 – Flood Insurance Rate Map

FIGURE



ATTACHMENT 1
FLOOD INSURANCE RATE MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations (SWEs) contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that the BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only to landward of 0.1% National Geospatial Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to measurements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was the New Jersey State Plane, NAD83, Zone 18. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geospatial Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geospatial Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geospatial Survey website at www.ngs.noaa.gov or contact the National Geospatial Survey at the following address:

National Geospatial Survey
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography provided by Union County GIS Bureau. The original data were taken in 1999 and provided as color images at scales of 1:600 and 1:1200. All images were resampled to black and white images with 2-foot Ground Sample Distance for use in this project.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodway and floodway boundaries were transferred from the previous FIRM. The original data were taken in 1999 and provided as color images at scales of 1:600 and 1:1200. All images were resampled to black and white images with 2-foot Ground Sample Distance for use in this project.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of communities with corresponding National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9606 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9603 and their website at www.maf.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program, in general, please call 1-877-FEMA MAP (1-877-368-2671) or visit the FEMA website at www.fema.gov.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Zone is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone AE, Zone A, Zone AH, Zone V, and Zone VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.
ZONE AH Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually short flow on sloping terrain); average depths determined. For areas of abutment on flooding, velocities also determined.
ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently dismantled. Zone AR indicates that the former flood control system is being removed to provide protection from the 1% annual chance flood or greater flood.
ZONE APF Area to be protected from 1% annual chance flood by a federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V Coastal flood areas with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE Coastal flood areas with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstructions so that the 1% annual chance flood can proceed without substantial increases in flood heights.

OTHER FLOOD AREAS
ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with damage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS
ZONE D Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
OTHERWISE PROTECTED AREAS (OPFA)

CBRS areas and OPFA are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPFA boundary
Boundary dividing Special Flood Hazard Areas and floodway areas of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and water elevation in feet
Base Flood Elevation value where uniform within zone; elevation in feet

*Referenced to the National Geospatial Vertical Datum of 1929

17°07' 31", 121°12' 31"

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Zone 18

1000-meter Universal Transverse Mercator grid tick value zone 18

5000-foot grid value; New Jersey State Plane coordinate system, NAD83, Zone 18

Bench mark (see explanation in Notes to Users section of this FIRM panel)

Map repository

Refer to Index of Map Panels on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

EFFECTIVE DATES OF REVISIONS TO THIS PANEL

For community map revision history prior to countywide mapping refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6623.

MAP SCALE 1" = 500'

250 500 1000 FEET

150 300 450 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0035F

FIRM FLOOD INSURANCE RATE MAP

UNION COUNTY, NEW JERSEY (ALL JURISDICTIONS)

PANEL 35 OF 49

USE MAP INDEX FOR FIRM PANEL LAYOUT

COUNTY **COMMUNITY** **NUMBER** **PANEL** **SUFFIX**

UNION COUNTY 34035C0035F

UNION COUNTY 34035C0035F

UNION COUNTY 34035C0035F

UNION COUNTY 34035C0035F

UNION COUNTY 34035C0035F

UNION COUNTY 34035C0035F

UNION COUNTY 34035C0035F

SECTION I
NATURAL HERITAGE PROGRAM LETTER

A Natural Heritage Database data request was made for the subject property, and the response is included with this application.



State of New Jersey

MAIL CODE 501-04

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF PARKS & FORESTRY

NEW JERSEY FOREST SERVICE

OFFICE OF NATURAL LANDS MANAGEMENT

P.O. BOX 420

TRENTON, NJ 08625-0420

Tel. (609) 984-1339 Fax (609) 984-0427

PHILIP D. MURPHY

Governor

SHEILA Y. OLIVER

Lt. Governor

CATHERINE R. McCABE

Acting Commissioner

June 19, 2018

Nicole Joy
Kleinfelder
321 Wall Street
Princeton, NJ 08540

Re: A18 Capping and Planting Pilot Test
Block(s) - 520, Lot(s) - 6
Linden City, Union County

Dear Ms. Joy:

Thank you for your data request regarding rare species information for the above referenced project site.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.3) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Natural Heritage Data Request Form into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

We have also checked the Landscape Project habitat mapping and Biotics Database for all occurrences of rare wildlife species or wildlife habitat within one mile of the referenced site. Please refer to Table 3 (attached) to determine if any rare wildlife species or wildlife habitat is documented within one mile of the project site. Detailed reports are provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on the project site.

For requests submitted as part of a Flood Hazard Area Control Act (FHACA) rule application, we report records for all rare plant species and ecological communities tracked by the Natural Heritage Program that may be on, or in the immediate vicinity of, your project site. A subset of these plant species are also covered by the FHACA rules when the records are located within one mile of the project site. One mile searches for FHACA plant species will only report precisely located occurrences for those wetland plant species identified under the FHACA regulations as being critically dependent on the watercourse. Please refer to Table 3 (attached) to determine if any precisely located rare wetland plant species covered by

the FHACA rules have been documented. Detailed reports are provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on, or in the immediate vicinity of, the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1, 2 and 3 (attached) to determine if any priority sites are located on, in the immediate vicinity, or within one mile of the project site.

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html>. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf.

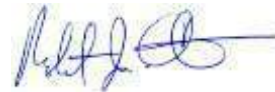
Beginning May 9, 2017, the Natural Heritage Program reports for wildlife species will utilize data from Landscape Project Version 3.3. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive web application at the following URL, <https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=0e6a44098c524ed99bf739953cb4d4c7>, or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

For additional information regarding any Federally listed plant or animal species, please contact the U.S. Fish & Wildlife Service, New Jersey Field Office at <http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html>.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf>.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Robert J. Cartica', is placed over a faint, light blue rectangular background.

Robert J. Cartica
Administrator

c: NHP File No. 18-4007462-14378

Mail Code 501-04 Department of Environmental Protection New Jersey Forest Service Office of Natural Lands Management P.O. Box 420 Trenton, New Jersey 08625-0420 Tel. (609) 984-1339 Fax. (609) 984-1427		<h1 style="text-align: right; margin: 0;"><i>Invoice</i></h1>	
		Date	Invoice #
		6/19/2018	14378
Bill to: Kleinfelder 321 Wall Street Princeton, NJ 08540		Make check payable to: DEP - Office of Natural Lands Management And forward with a copy of this statement to: Mail Code 501-04 Office of Natural Lands Management P.O. Box 420 Trenton, New Jersey 08625-0420	
Quantity (hrs.)	Description	Rate (per hr.)	Amount
1	Natural Heritage Database search for locational information of rare species and ecological communities. Project: 18-4007462-14378	\$ 70.00	\$ 70.00
Nicole Joy Project Name: A18 Capping and Planting Pilot Test		Total	\$ 70.00

Table 1: On Site Data Request Search Results (6 Possible Reports)

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

<p>Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
--

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Aves</i>								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Bald Eagle	Haliaeetus leucocephalus	Nest	4	NA	State Endangered	G5	S1B,S2N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N

Table 2: Vicinity Data Request Search Results (6 possible reports)

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

<p align="center">Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<hr/>								
<i>Aves</i>								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Bald Eagle	Haliaeetus leucocephalus	Nest	4	NA	State Endangered	G5	S1B,S2N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N

Table 3: Within 1 Mile for FHACA Searches (6 possible reports)

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Rare Plant Species Occurrences Covered by the Flood Hazard Area Control Act Rule Within One Mile of the Project Site Based on Search of Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within 1 mile	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	2 page(s) included
4. Vernal Pool Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species Within One Mile of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

<p align="center">Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Aves</i>								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Bald Eagle	Haliaeetus leucocephalus	Nest	4	NA	State Endangered	G5	S1B,S2N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Least Tern	Sternula antillarum	Foraging	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Northern Harrier	Circus cyaneus	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N

Osteichthyes

**Rare Wildlife Species or Wildlife Habitat Within
One Mile of the Project Site Based on Search of
Landscape Project 3.3 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
	Atlantic Sturgeon	Acipenser oxyrinchus	Migration Corridor - Adult Sighting	5	Federally Listed Endangered	State Endangered	G3	S1
	Shortnose Sturgeon	Acipenser brevirostrum	Migration Corridor - Adult Sighting	5	Federally Listed Endangered	State Endangered	G3	S1

SECTION J
APPLICATION CD
